

ORIGINAL

BEFORE THE BOARD OF OIL, GAS & MINING
DEPARTMENT OF NATURAL RESOURCES
IN AND FOR THE STATE OF UTAH

FIVE-YEAR PERMIT RENEWAL)
FOR BEAR CANYON MINE, CO-OP) CAUSE NO. ACC/015/025
MINING COMPANY.) Volume I

Thursday, October 17, 1996, commencing at
the hour of 8:36 a.m., an informal hearing was held
in the above matter before the Board of Oil, Gas &
Mining, at the Emery County Courthouse, 95 East Main
Street, Commission Chamber, Castle Dale, Utah.

Reported by:

Rebecca J. Garner, RPR



Associated Professional Reporters

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1
2 P R O C E E D I N G S
3

4 MR. CARTER: Good morning. For those of you I haven't
5 met, I'm Jim Carter. I'm the director of the Division of
6 Oil, Gas and Mining which is a division of the Department of
7 Natural Resources. We are here this morning on an informal
8 conference, and I'll read that into the record. But
9 preliminarily I wanted to say that the conduct of informal
10 conferences under the Administrative Procedures Act and the
11 way the division has generally done these is we -- it's
12 very informal. Although all the parties this morning are
13 represented by counsel, I recommend and suggest that to the
14 extent you can have your witnesses put on testimony in a
15 narrative fashion we do that.

16 The hearings before the board as you know are
17 formal hearings with examination, cross-examination and most
18 of the protocols you see in court. And this is an informal
19 conference, so we don't need to observe all of those. We
20 will for the purposes of clarity so that we don't get too
21 confused. But again I encourage you to proceed as
22 informally as you can so that we can get through all the
23 material we need to.

24 This is in the matter of the five-year permit
25 renewal for the Bear Canyon Mine, Co-op Mining Company,

1 Emery County, Utah, No. ACC/015/025. This is a matter that
2 is here for division consideration on a remand from the
3 Board of Oil, Gas and Mining. A very brief history.

4 There are of course differences of opinion
5 about what should have happened and so forth. The division
6 did approve Co-op Mining's five-year permit renewal. That
7 approval was appealed to the Board of Oil, Gas and Mining.

8 The board determined that the informal
9 conference which is contemplated in the rules on all
10 division actions take place prior to the board making any
11 further ruling on it, and my understanding, and I'll -- I
12 stand to be corrected by counsel if they have a different
13 perception, is that the board has essentially handed this
14 back to the division to resolve.

15 Whatever the division does would result I think
16 in a new reappealable order. I don't believe that the board
17 is expecting a report from the division. I think the board
18 expected the division to just make a determination and
19 decide how to proceed.

20 So having said that, something else that's
21 happening this morning that's unusual for this informal
22 conference is that we are making a transcript. As you can
23 see we have a reporter making a transcript of the
24 proceedings. That's not as my mother would say, we're not
25 trying to borrow trouble here, but we wanted to make sure we

1 got everything in the record in the event there needs to be
2 additional review or discussion about what all we do here.

3 So having said that, perhaps we ought to, since
4 we have a record, we ought to have counsel enter their
5 appearances for the record.

6 MR. APPEL: Jeffrey Appel on behalf of the Castle
7 Valley Special Services District, objectors.

8 MR. SMITH: Craig Smith on behalf of objectors
9 Huntington-Cleveland Irrigation Company and North Emery
10 Water Users Association.

11 MR. HANSEN: Mark Hansen on behalf of CWM Company.

12 MR. CARTER: All right. One other note, and that is
13 that as you can see from the notice of the informal
14 conference, we're contemplating and planning on in fact a
15 field portion of the informal conference. The objectors
16 felt that it's important, feel it's important for me, and
17 Pete has as well, who I'm sure Pete has seen these features
18 before, to go out to the vicinity of the features of
19 concern, the springs and seams, and the objectors would like
20 me to see the geologic features that they think support
21 their contentions.

22 Having said that, I think it's most important
23 we give everyone an opportunity to make a complete record
24 here in the informal conference, we get everything said and
25 all the materials submitted for my consideration that the

1 parties believe are important. So we're shooting for a
2 completion of this part at 12:30.

3 MR. SMITH: 12:00 or 12:30.

4 MR. CARTER: I think we need to play it by order, but
5 I don't want to foreshorten what needs to be said here.
6 We'll see how it goes. But that's what we're trying to
7 accomplish. And with that perhaps I'll turn it over to
8 Mr. Appel.

9 MR. APPEL: In order to see all the geography down
10 there and how spread out it is, we need to leave at noon or
11 12:30 to see what we need to see. We think it's important.
12 We recognize that we're going first as the objectors and
13 there's no intention here to foreclose anything that CW or
14 Co-op wants to say. So with that in mind we would offer
15 that anything that remains when we need to leave should be
16 revisited perhaps in Salt Lake which would be more
17 convenient for counsel and the witnesses, I think. We can
18 finish it there, in other words, if there's something that's
19 left.

20 MR. CARTER: I'd like to avoid making a ruling on that
21 or argument about what we do when until we get there.

22 MR. APPEL: We may get done today and that would be
23 fine with us. The reason we all came down there and
24 obviously a lot of the folks are here. Rather than holding
25 it typically where it's held in Salt Lake was simply to

1 allow for the field trip. So we don't want the field trip
2 to be missed because that would defeat the whole purpose of
3 people driving down here and the extra expense that all
4 parties have gone through to have counsel, which I think is
5 all based in Salt Lake, to come down here.

6 MR. CARTER: Let's see how we do.

7 MR. APPEL: Okay.

8 MR. CARTER: With that let's proceed.

9 MR. APPEL: By way of opening statement, what we
10 intend to show today, we being Castle Valley Special Service
11 District together with the other objectors is that the
12 geologic data supplied by Co-op, CW Mining, I'll refer to
13 them as one and the same because they used to be one thing
14 and now they appear to be another, is inadequate and
15 misleading; that they have relied on faulty information;
16 that their conclusions are wrong concerning impact on
17 hydrologic consequences and the springs of objectors; and
18 that they have narrowed that inquiry substantially for their
19 own purposes.

20 Additionally there is no viable replacement
21 source identified, or any other materials, which according
22 to PHC, they should provide that as a precondition to
23 renewal, we believe. We also believe that in violation of
24 the terms and conditions of the existing permit the mining
25 operation has moved water around, has bypassed meters, has

1 MR. CARTER: Mr. Smith?

2 MR. SMITH: Thank you, Mr. Carter. Just to add to the
3 thing of Mr. Appel, we have attempted and are attempting to
4 coordinate our presentation so you don't hear things twice.
5 We'll just say things once. So we'll be doing that
6 throughout the day. So I'm not going to sit here and repeat
7 all the things that Mr. Appel has just said. I'm just going
8 to maybe in the way of adding a couple matters to that.

9 I know this is a familiar issue to the
10 division. It's been an issue of concern for the water users
11 for some time. We have worked very hard to bring new
12 information to this informal conference today to help the
13 division better understand the hydrology of the area and the
14 impact that mining is having on Birch and Big Bear Springs
15 which are two very critical drinking water sources for
16 Castle Valley Special Services District and North Emery
17 Water Users, and we believe that from the new information
18 that we have that we're going to present today that it
19 becomes very, very clear that the mining operations of Co-op
20 have intercepted the same water that feeds these springs and
21 is responsible for the diminution of flows and in water
22 quality in these springs.

23 We have no -- we are not against mining. We
24 are not against Co-op. We are simply trying to protect
25 critical water sources and ask the division to aid us under

1 the laws and regulations that are in effect to protect these
2 water sources from the adverse impacts of mining. And
3 that's the sole reason we're here today.

4 MR. HANSEN: Well, Mr. Carter, it sounds like what the
5 water users intend is to go over old ground that has already
6 been covered both before the division and the board, and in
7 the interests of developing a full record, I'm not going to
8 sit back here and object at every single point that they
9 intend to raise, and if they want to bring in information we
10 can look at that information point by point.

11 But the simple fact is that the division has
12 already found once and the board found on appeal after a
13 full evidentiary hearing where Co-op, not the water users,
14 bore the burden of proof that the entire permit area is
15 hydrologically isolated from these two springs. And because
16 of that fact, the underground effects of mining within
17 forest permitted area do not, have not and cannot affect the
18 water flow, either quality or quantity, at Birch and Big
19 Bear Springs.

20 And we are not going to completely go through
21 our entire permit. We're not going to completely go through
22 our entire hydrology portion of the permit. We would submit
23 that it is already in the record and we stand here ready to
24 respond to any of the allegations that the water users seek
25 to raise today.

1 MR. CARTER: Okay. I don't want to make a specific
2 ruling on legal matters such as burden of proof and those
3 kinds of things. What I'm going to have to do is consult
4 with my legal advisers before I make a complete
5 determination. But I'll say this: My understanding is the
6 primary purpose today would be for the objectors to present
7 evidence or interpretations of information that the board --
8 or excuse me, the division has either overlooked or
9 misinterpreted or new evidence that has not been included;
10 that we do have, as you pointed out, a decision by the
11 division and another decision by the board that has made
12 some conclusions.

13 Now the way the coal program works, at least my
14 understanding of the coal program is that any time new
15 information is presented that might tend to undermine or
16 contradict a conclusion we've made administratively, we have
17 the ability to take a look at that and make a call.
18 Something new happens or something new comes to light that
19 we're aware of to try and see if that changes our conclusion
20 about how things are working.

21 But there's a balance here. You're correct in
22 pointing out that decisions have been made and findings have
23 been made based upon bodies of evidence already in front of
24 us. So I think having said -- my purpose in saying this is
25 to say that I do believe that the objectors have the burden

1 of proceeding, and the burden of proof is a legal term.
2 I'll make a determination with regard to that, that part of
3 the order. All right. Go ahead.

4 MR. SMITH: Our first witness is Darrel Leamaster.

5 MR. CARTER: Yeah. Here's a question for you. Do you
6 think we need to have witnesses sworn? In an informal --

7 MR. APPEL: Does it ever hurt?

8 MR. CARTER: In an informal hearing according to the
9 Administrative Procedures Act we're not really relying on
10 sworn testimony, but I'll refer to the wishes. We have a
11 reporter here and this is looking, walking and talking more
12 like a formal proceeding, although it's not. You tell me
13 what you think.

14 MR. SMITH: It will take six seconds.

15 MR. CARTER: Great.

16 MR. HANSEN: If they want to that's fine. I don't
17 see. I'll be happy to keep this as informal as possible.

18 MR. CARTER: Okay. Since it will only take a minute
19 or two, let's do that. Since we're going to do that, let's
20 have Mr. Leamaster sworn.

21

22 DARRELL LEAMASTER

23 called as a witness, for and on behalf of the
24 Objectors, being duly sworn, was examined and
25 testified as follows:

1
2 EXAMINATION
3

4 BY MR. APPEL:

5 Q. Would you state your name, please, sir?

6 A. Yes, my name is Darrel Leamaster.

7 Q. And where are you currently employed?

8 A. I'm the district manager for the Castle Valley
9 Special Service District.

10 Q. What is your professional background?

11 A. I'm a registered professional civil engineer
12 and I've been with Castle Valley Special Service District
13 for 19 years.

14 Q. Can you describe the service area of Castle
15 Valley Special Service District?

16 A. Yes, Castle Valley Special Service District
17 operates the western portion of Emery County. We provide
18 services for eight different communities. We provide
19 drinking water, irrigation water, sewer, drainage and roads
20 for those eight communities.

21 Q. Do you rely on any water sources that are near
22 or adjacent to the permit area of the Co-op mine?

23 A. Yes, we do. Specifically we rely on the Big
24 Bear Spring which provides water for -- excuse me, provides
25 water for the communities of Huntington and Cleveland and

1 Elmo.

2 Q. Where is Big Bear Spring located?

3 A. Big Bear Spring is located in the mouth of Bear
4 Canyon approximately 1500 feet down from the Co-op mine,
5 down the canyon.

6 Q. How important is that source to the service of
7 your customers?

8 A. It's an extremely important source. According
9 to the records we've been able to find, it was developed in
10 about 1930, so it's been used for some 66 years by the
11 community of Huntington. It runs continuously day and
12 night. It's been very reliable and very good quality water
13 for our community for all those 66 years. It's extremely
14 important to us.

15 Q. Are you familiar with the available water
16 resources or water resources available to you to serve
17 people in this area?

18 A. Yes. We look at that all the time. Are
19 looking for other sources and other places where we might
20 augment our water supplies.

21 Q. Are there any natural sources that are
22 available for replacement if you were to lose Big Bear?

23 A. There's nothing that is close that we're aware
24 of. We've looked in all the adjacent canyons. The latest
25 things we developed were in Tie Fork Canyon, which is

1 somewhere approximately 10 miles away from this source. We
2 don't know of any other sources close by.

3 Q. Are you aware of the replacement source that
4 the Co-op has suggested would be used in their documents
5 filed for their permit?

6 A. I don't know that they've suggested a
7 replacement source.

8 Q. Have they suggested any replacement water?

9 A. Not to us.

10 Q. Okay. Have you had any problems over the past
11 six or seven years at Big Bear Springs?

12 A. Yes, we have.

13 Q. What are those?

14 A. We've had problems. In our opinion we've lost
15 the flow; the full quantity has been greatly reduced.

16 MR. HANSEN: Mr. Carter --

17 MR. CARTER: Hold on just a minute.

18 MR. HANSEN: Although this not a formal, it is
19 transcribed, and I want to make a formal objection for the
20 record. If someone's seeking covered material that has
21 already been adjudicated and resolved against the water
22 users, I'm not saying he can't go forward. I realize this
23 is informal, but I do make that objection.

24 MR. CARTER: Okay. Thank you. Go ahead, Mr.
25 Leamaster.

1 THE WITNESS: And also we have seen the quality of our
2 water impacted, particularly during the period of December
3 1990 through 1991 when we saw spikes in sulfate calcium,
4 TDS's, other quantities in our flow. Qualities, I should
5 say. Not quantities.

6 Q. BY MR. APPEL: Was that out of the ordinary?

7 A. Yes, it was. We haven't seen anything like
8 that before nor since.

9 Q. Do the flows appear to be impacted now at that
10 spring?

11 A. In my opinion, yes, they are. We have not had
12 the recoveries. Since we've had more normal precipitation
13 the last couple years, our spring has not recovered and has
14 not returned to the flow patterns that it had prior to
15 mining.

16 Q. Okay. And you refer to normal precipitation as
17 compared to what?

18 A. Compared to the period of time when we had a
19 drought in the area and precipitation amounts were lower
20 than normal.

21 Q. Have your other sources come back?

22 A. Yes, they have.

23 Q. Okay. But Big Bear has not?

24 A. Big Bear has not.

25 Q. Have you had a chance to walk the perimeter of

1 the coal permit area --

2 A. Yes, I have.

3 Q. -- from time to time?

4 A. Yes, I have.

5 Q. Have you noticed any problems with subsidence?

6 A. Yes. We've observed subsidence problems in the
7 Dry Canyon area. We have photographs that we obtained from
8 DOGM, and we also have photographs that we obtained where
9 we've seen considerable subsidence in the bottom of the Dry
10 Canyon area.

11 Q. Have you noticed any breakouts?

12 A. Yes, we have. There are breakouts in those
13 areas.

14 Q. How would you define a breakout for those lay
15 people in the audience, of which there are probably none.

16 MR. CARTER: Only me.

17 THE WITNESS: Basically it's a big sinkhole. It's a
18 sinkhole in the bottom of the canyon. There's a large
19 opening opened up down to the coal seam. The whole bottom
20 of the canyon is -- I guess you could say it looks like a
21 disaster area. There are several holes there.

22 Q. BY MR. APPEL: In your experience do you
23 understand the regulations of DOGM to protect against
24 subsidence and events like that?

25 A. I don't know if I understand it completely, but

1 I think there are regulations that prevent that. There are
2 also subsidence cracks that we have observed up on the
3 ridges up above the mining operation. Not as severe as
4 those sinkholes that we've seen.

5 Q. As you sit here today, why don't you tell us
6 about some of the other problems you can remember that
7 you've witnessed that may be created by mining?

8 A. I'm not sure which direction to go here. Do
9 you want me to talk about the problems that we've seen with
10 the water levels --

11 Q. Yes.

12 A. -- of the Co-op mine? In previous information
13 that they've submitted that is on the record in their
14 hydraulic reports recorded, and I'm going to quote part of
15 this. This is from the hydrologic evaluations dated March
16 11th, 1991. They reported the east mains inflow remained
17 constant until the summer of 1989 when water was encountered
18 in the northern end of the north main entrance that,
19 according to Wendell Owen, the mine intercepted a flow of
20 about 110 gallons per minute. So they acknowledge here that
21 at that point in time they encountered around 110 gallons
22 per minute in the mine.

23 Now I want to talk about that for a minute.
24 110 gallons per minute represents 158,400 gallons per day,
25 or 4,752,000 gallons per month. Now we've examined the

1 records from the Co-op, and their first reported discharge
2 from the mine occurred in April of 1991. So from the summer
3 of 1989 until April of 1991 they recorded no discharges.
4 There's approximately 21 months of time elapsed from that
5 time period. That 21 months represents 99,792,000 gallons
6 of water or about 300 acre feet of water.

7 We would like to consider what happened to that
8 water, where that water went. We have information that
9 we've received, and I think we'll have more testimony on
10 that later today, that beginning in 1989 the Co-op
11 discharged water into the Dry Canyon area. This water
12 flowed down Dry Canyon area and we're not exactly sure where
13 it all went. We believe that it impacted the Birch Spring.

14 Previously on the record we have made note of
15 an extremely high flow pattern that occurred on Birch
16 Spring. It started on October 17th, 1989, and that
17 continued for two or three months. We in previous hearings
18 talked about the fact that some unknown occurrence had
19 happened which had caused a tremendous unnatural high flow
20 to go into Birch Spring. During that time period as we have
21 on the record already shown, we had oil and grease, fecal
22 coliform, and we had other contaminants in the spring.

23 MR. CARTER: Is Birch Spring in the same canyon as Dry
24 Canyon?

25 THE WITNESS: Birch Spring is slightly over the ridge,

1 and I think our expert will testify the fault that feeds
2 that spring trends to the north and up through the bottom of
3 Dry Canyon. It's our opinion, at least my opinion, that the
4 flow that was being discharged from the Co-op Mine was able
5 to work its way into that fault, break through, and account
6 for the high flow that occurred in Birch Spring. When this
7 happened, we believe that the Co-op then quit discharging
8 into Dry Creek. And at that point in time we think that
9 they began discharging into the abandoned mine workings on
10 the south end of the mine.

11 In December of 1990 and January of 1991, we
12 then observed large icicles on the cliffs above our
13 springs. We had photographs of those that we previously
14 submitted as evidence and we also observed the high peaks in
15 flow or in quality parameters on our Big Bear Spring. We
16 also observed an increase in flow in our Big Bear Spring at
17 that time period.

18 We have since found out that the information
19 that the Co-op was discharging into that abandoned well was
20 available. It wasn't owned to DOGM, and there are letters
21 available that show that they were aware of that.

22 Q. BY MR. APPEL: Let's start at this point and
23 mark an exhibit, if we could.

24 MR. CARTER: Sure. If this is something that's in the
25 record, we can just take administrative notice of it.

1 MR. APPEL: I don't know if it's in the record.

2 MR. CARTER: If it's in our files, then we can just
3 make an administrative note of it and we don't have to
4 introduce it.

5 MR. APPEL: All right. Let's proceed that way.

6 MR. CARTER: All right.

7 MR. APPEL: I know. We're struggling to turn into
8 something more formal.

9 MR. CARTER: We are.

10 Q. BY MR. APPEL: What correspondence are you
11 referring to?

12 A. This is an interoffice memo from Tom Munson,
13 senior reclamation hydrologist addressed to Pamela
14 Grubaugh-Littig, permit supervisor, dated May 17th, 1991.

15 Q. And how did that come into your possession?

16 A. I obtained that from the DOGM files in Salt
17 Lake City.

18 Q. When was that?

19 A. I'm not sure of the exact date. Three weeks
20 ago or so. Three or four weeks ago.

21 Q. And this is the first time this information has
22 come into your possession, isn't it?

23 A. Yes, it is.

24 Q. So it's new information?

25 A. Yes.

1 Q. Read to us the important portions of the May
2 17th, 1991 memo.

3 A. Okay. I'd like to read first the synopsis. It
4 says:

5 "My previous memo of March 14th, 1991
6 regarding the response from Co-op Mining
7 Company and their consultant, Earthfax
8 Engineering, to the objections raised by
9 Castle Valley Special Services District, North
10 Emery Water Users and Huntington-Cleveland
11 Irrigation District discussed point-by-point
12 the conclusions of the Earthfax report. Based
13 on new information provided by Co-op Mining
14 Company in response to a Division order dated
15 November 27th, 1990 as well as an hydrologic
16 investigation by Paul Anderson, Consultant to
17 the Division, the groundwater impacts
18 associated with the present workings at Bear
19 Canyon Mine have been reevaluated. An updated
20 analysis is provided below."

21 Then he talks about several things, and I'd
22 like to refer to item No. 3. "Water intercepted within the
23 mine workings of the Bear Canyon Mine have not had any
24 identifiable impact on the spring flows of Big Bear or Birch
25 Springs."

1 Q. Now that's a conclusion of whom?

2 A. That was the conclusion from the Earthfax
3 report. And he's responding now to that.

4 Q. And that's from the hydrogeologic evaluation?

5 A. Yes.

6 Q. For the permit.

7 A. Right.

8 Q. Okay. So that's Co-op's conclusion?

9 A. Right. He says, "It has been discovered that
10 mine water was pumped into old workings in the south end of
11 the mine via a pressure relief valve set up on the in-mine
12 pumping system."

13 Then down in the next paragraph:

14 "Based on the information the Division
15 has received from Co-op in response to its
16 November 27th, 1990 Division Order, and a
17 verification that the pumping system and
18 set-up, conducted on May 16th, 1991 by Jesse
19 Kelley, the Division has made the following
20 observations:

21 "Pumping water into the old workings
22 via the old pumping and piping system most
23 probably had an effect on the water balance in
24 the old workings causing a discharge to occur
25 at the outcrop, potentially affecting Big Bear

1 Spring."

2 MR. CARTER: Is that ongoing? Maybe I ought to just
3 ask Co-op. Since this is informal I get to jump in.

4 THE WITNESS: In the letter he says that they have
5 corrected the problem, that they have put a meter on that
6 discharge that went into the old abandoned mine workings and
7 are monitoring that. Now we have no information to know
8 whether they were actually doing that or not.

9 MR. CARTER: Let me just ask Charles. This is kind of
10 a mixed thing but generally the informals I get to ask
11 questions whenever something pops up. So let me ask
12 Charles. This is Charles Reynolds, for the record.

13 MR. REYNOLDS: That water at the time was discharged
14 into the old workings. After looking at it and evaluating
15 it, as a result of comments and recommendation, that was
16 discontinued back at that time; that is where the water went
17 prior to being discharged in '91 was coming into the mine.
18 It was put into the old workings, and at the time it
19 appeared there may be a potential, in fact the Division
20 requested that cease and that was discontinued.

21 THE WITNESS: There is one more sentence here that he
22 writes that maybe I should read.

23 MR. CARTER: Okay.

24 THE WITNESS: He says in "Final Analysis and
25 Recommendation," "Based on the discovery of the pumping of

1 water into the old workings and the documented increase in
2 the flow in Big Bear Spring, the termination of pumping
3 water into the old workings will hopefully solve the current
4 quantity and quality abnormalities at Big Bear Spring."

5 MR. CARTER: Okay.

6 Q. BY MR. APPEL: And when you came into
7 possession of this information, did it square with the
8 language of the permit at the time it was given to Co-op in
9 1991?

10 A. No, I don't think so. I don't think that they
11 were allowed to discharge into that area, and I think that
12 it also shows that they did impact our spring.

13 Q. Which they had denied in the past?

14 A. Which they had denied, which we talked about in
15 previous hearings, and it was never admitted that they were
16 pumping water into that area. There was never anything said
17 about where the icicles on the ledges were coming from. We
18 think that was information that was available in previous
19 hearings that was never brought out.

20 Q. Just for the record, the hearing in the last
21 permit renewal was held February 5th, 1991. The order was
22 issued May 20th, 1991, and this memo is dated May 17th,
23 1991. Hence the concern with not being in the order. It
24 was known to the Division.

25 Do you have any concerns in the future about

1 this particular problem with the obvious connection between
2 the mine workings in that area and the spring?

3 A. Yes. I think the biggest concern we have is
4 what's going to happen when mining is discontinued and they
5 discontinue pumping out of the mine. As those sections of
6 the mine fill back up with water, what's going to prevent
7 that from again impacting our spring and causing the same
8 kind of abnormalities in quantity and quality of our water?

9 Q. Those spike flows or abnormal flows in Big Bear
10 Spring, did they occur during this period of time?

11 A. Yes, they did.

12 Q. So that's what you're referring to?

13 A. Yes.

14 Q. And your suspicions have proven to be correct
15 from this report?

16 A. Yes.

17 Q. I have nothing further.

18 MR. CARTER: Okay. It's --

19 MR. SMITH: I have just a couple questions.

20 MR. CARTER: Go ahead, Mr. Smith. This is informal;
21 right? I'm confused.

22

23

EXAMINATION

24 BY MR. SMITH:

25 Q. Mr. Leamaster, who is the holder of the water

1 rights that Castle Valley Special Services District uses?

2 A. The Castle Valley Special Services District has
3 the rights to the Big Bear Spring. Of course the Huntington
4 Irrigation Company owns all the water rights and we have --
5 we own shares in Huntington-Cleveland Irrigation Company,
6 and we have a point of discharge that allows us to collect
7 that water at the spring.

8 Q. Okay. And I take it the spring is second to
9 Castle Valley Special Services District?

10 A. Yes, it is.

11 Q. And so if contamination were to come into that
12 spring, what would happen?

13 A. It would be very difficult for us to pick that
14 up. We have no continuous monitoring on the spring. We
15 sample it throughout the year, but it's not continuously
16 monitored, so it could be contaminated. It would get into
17 the system and the first indication we would have would
18 probably be if we received complaints from our customers.

19 Q. So it actually would get straight through to
20 the users in the cities that you serve because it is
21 connected to your system?

22 A. That's correct. The only treatment that it
23 receives is we do chlorinate it prior to it reaching any of
24 our customers. But it doesn't receive any other treatment
25 and it goes directly from the spring into our system and to

1 our customers.

2 Q. So I take it since at least from the reports
3 you've read about the interconnection between the mine
4 workings and Big Bear Spring, if something were put into the
5 mine, it could then get into your spring and then to the
6 customers; is that correct?

7 A. That could possibly happen, yes.

8 Q. Okay. That's all the questions I have.

9 MR. APPEL: May I ask one more or shall I wait for
10 him?

11 MR. HANSEN: It's informal.

12 MR. CARTER: Yeah. We keep saying that. Go ahead.

13

14 FURTHER EXAMINATION

15 BY MR. APPEL:

16 Q. We were discussing early in your testimony the
17 availability of replacement sources. How much water per
18 year on average comes from Big Bear Spring?

19 A. I can't remember exactly the total. Right now
20 we're running about 148 gallons per minute. It's gotten as
21 low as 76. Prior to mining we had times when we were up to
22 close to 300 gallons a minute coming from the spring.

23 Q. So if you had to -- this may be unfair and it
24 may take you a minute to do, if you had to quantify that
25 into acre feet, how much water would have to be replaced if

1 you were to lose Big Bear Spring to make your system whole?

2 A. I'd have to calculate that to get an accurate
3 figure. Like I said it's a lot of water when you think
4 about say 140 gallons a minute running 24 hours a day for a
5 full year. It's a lot of water.

6 Q. Between a hundred and two hundred acre feet
7 you'd guess without calculating?

8 A. Yeah, at least that much. Let's see if we use
9 140 gallons per minute here, yeah. It's about 73 million
10 gallons a year, which would be approximately 43, about 43
11 acre feet. Let's see 43, 4300 acre feet. Does that sound
12 right? 43,000 acre feet roughly.

13 MR. HANSEN: I have a question for you, Mr. Carter.

14 MR. CARTER: Sure.

15 MR. HANSEN: Are the proceedings in the record that
16 was made during Co-op's -- the hearing on Co-op's request
17 for the permit revision part of the record? Are we able to
18 refer to those?

19 MR. CARTER: Yes.

20 MR. HANSEN: They're all before the Division.

21 MR. CARTER: Everything in the Division files that
22 bears on this matter is part of the record and I'm
23 telegraphing a little bit here, but the process I plan to
24 apply is to take whatever testimony and argument and
25 interpretation is presented here and compare that with where

1 we've -- what conclusions we've made in order to determine
2 whether or not the Division has announced the correct view
3 of the world or not. So the whole record in my view is part
4 of this proceeding.

5 MR. APPEL: And you understand that from our
6 perspective that was an entirely different purpose; that
7 time that being the impact of the mining tank seam.

8 MR. CARTER: I knew we'd --

9 MR. APPEL: Which is now currently on appeal before
10 the Utah Supreme Court.

11 MR. CARTER: I think as an administrative matter, and
12 it sounds kind of simpleminded or simplistic, but I think my
13 view of the Division's responsibilities as well as what the
14 Division's opportunity is to avail all the factual evidence
15 that has ever been presented to the Division, and then to
16 draw conclusions as to whether or not the conclusions that
17 currently are standing, the conclusions that we've
18 previously remained drawn are valid or whether we overlooked
19 something or whether there's new evidence or information
20 that would tend to change our minds about some conclusion we
21 made.

22 So without being -- and that's I guess part of
23 the difficulty that this is appearing to be a formal
24 proceeding, almost court proceeding when in fact it's an
25 informal proceeding in which I'm making myself available for

1 new information that we may have overlooked or new
2 interpretations that we didn't apply. But I feel that I'm
3 not constrained to look only at a portion of the record. I
4 think I can consider all the facts that have ever been
5 presented or offered to the Division in any context, whether
6 through Board order or whatever, and make some conclusions.

7 I think there's -- the reason that this has
8 formal aspects is that at the conclusion here you may well
9 want to make argument about -- counsel may well want to
10 make argument about what facts -- you may argue that
11 there's a realm of the facts that the Division cannot
12 reconsider because they've been determined on appeal to be
13 the facts, so that I couldn't simply substitute my judgment
14 or Division's judgment for the Board's judgment on something
15 without a basis, without tying that to a new fact.

16 I think the Division is free on presentation of
17 new evidence to say, well, the Board knew what it knew six
18 months ago, but it didn't know something that I now know,
19 and so I'm now free to make a new determination based on the
20 new evidence as an administrative matter.

21 MR. APPEL: Just so our point is clear, the subject
22 matter before the Division and the Board in the proceeding
23 you're referring to was the tank seam, and the
24 cross-examination evidence submitted, the evidence you'll
25 see today wasn't relevant and determined not relevant

1 before. So if you're going to apply conclusions of the
2 Board and apply conclusions suggested by the experts of
3 Co-op, you need to bear in mind that we had no reason to
4 object because we weren't doing this renewal proceeding.

5 So what I'm suggesting to you is lifting or --
6 don't take this the wrong way -- cutting this and pasting
7 from that to this would basically violate our rights to due
8 process.

9 MR. CARTER: Okay. Let me see if this helps.
10 Typically what I do in an informal conference is -- see, I
11 forget that I'm no longer on the Board. This feels like I'm
12 on the Board. So since I'm not on the Board, I'm not going
13 to be making any conclusions of law. I'm going to refer to
14 the assistant attorneys general to tell me what the
15 conclusions of law are. I think I'm only a fact-finder.

16 So typically what I do in these informal
17 conferences is everyone makes the argument, legal arguments
18 as well to me. I dutifully make notes. I record my
19 thoughts and impressions and I go away and make conclusions
20 or findings of fact or proposed findings of fact. And then
21 I talk to my assistant AGs about whether I can do that and
22 is there a problem as an agency, can we make those findings.
23 And in terms of legal arguments I'll have to defer entirely
24 to the advice of the AGs.

25 So I'm not -- this is really somewhat awkward

1 because I can't make a legal ruling or legal determination
2 on what's admissible or not admissible on what the entire
3 record is. I can take your arguments about what the record
4 should be or shouldn't be, note those clearly and then just
5 have to ask my attorneys what their advice is for me.

6 This is somewhat awkward. And I think I'm
7 going to try to carefully craft an order of the Division
8 that doesn't do any violence to due process rights or
9 overturn, inappropriately overturn or upset findings of the
10 Board or previous findings of the Division.

11 But I think -- maybe I'm making this more
12 complicated than it is, or maybe it's really this
13 complicated. But I think I need to just take all this in
14 without making any determinations about what I will consider
15 or won't consider. And I understand Mr. Hansen's argument
16 to be that we should consider the entire record, all the
17 facts.

18 MR. HANSEN: That is my question, because I don't want
19 to have to go back and resubmit evidence at this informal
20 conference that was already formally submitted under oath in
21 the previous proceeding and is available to the Division. I
22 would like to be able to just comment on that evidence and
23 point it out to you so that you can go back and refer to it
24 rather than putting it in all over again.

25 MR. CARTER: I think that's appropriate, and I think

1 if you want to then caution me and say -- you can tell me
2 whatever you want to tell me.

3 MR. APPEL: I think Mr. Hansen does that at his peril
4 because the purpose of that particular proceeding was vastly
5 different than the purpose of this. So if he wants to rely
6 on that prior testimony, it may be that it is all stricken
7 as irrelevant because of the Supreme Court ruling. If he
8 wants to put on evidence concerning this renewal and if he
9 wants to rely on incorporation of old evidence, I suppose
10 that he can do that. But I'm just telling you what our
11 position will be is if he doesn't put his evidence on here
12 then he may well find it's barred. I'm not asking for a
13 real ruling either. I'm just telling Mr. Hansen where I'm
14 coming from.

15 MR. HANSEN: And regarding that argument, assuming the
16 water users prevail at this informal conference, my
17 understanding -- correct me if I'm wrong, please -- is that
18 this would then have its own right to appeal. Then we would
19 be in an informal evidentiary hearing before the Board and
20 formally put all that evidence under oath in any case.

21 MR. CARTER: The purpose of -- the Board would review
22 this matter de novo. That makes it the Division makes some
23 mistake of fact or law, no one's bound by that. And I think
24 that the informal conference is exactly that.

25 I don't think that a failure by a party, the

1 onus, if Co-op were to fail to introduce some evidence or
2 argument and the ruling went against them, I don't think
3 they're prejudiced. I think they say, well, we tried to
4 convince the director to do the right thing and he didn't,
5 so now we're going to appeal it to the Board.

6 And I think when you go to the Board you start
7 from scratch. And then the Board will turn to its counsel.
8 The Board then is able to make findings of fact and
9 conclusions of law. So the Board will turn to its counsel
10 and decide what can come in and what can't come in.

11 I think the advantage of the informal
12 conference is that we don't need to take in the entire
13 universe of evidence for fear that you'll then be barred in
14 subsequent proceedings because this really is sort of the
15 Division's last clear chance to do the right thing before
16 its determinations end up in front of the Board. And that's
17 kind of the way I view it. So --

18 MR. APPEL: A new application of the last clear chance
19 doctrine.

20 MR. HANSEN: That's right.

21 MR. CARTER: That's right. And I appreciate it when
22 we're asked to conduct informals because it allows me to
23 review it and obtain the advice of AGs whether I want to
24 change the Division's mind or whether we want to stand pat
25 and let the Board review it just the way we've done this.

1 MR. APPEL: I appreciate that, Mr. Carter.

2 MR. NIELSEN: I did the calculation. 220 acre feet.
3 It represents 140 gallons a minute.

4 Q. BY MR. APPEL: And as far as you're aware the
5 Castle Valley Special Services District portion is 15
6 shares?

7 A. 15 shares.

8 Q. Which is how many acre feet?

9 A. That's about five.

10 Q. And that's in the Huntington-Cleveland
11 Irrigation District?

12 A. Yeah.

13 Q. Which relies on what sources?

14 A. I don't know.

15 Q. Okay. If you had to replace 220 acre feet,
16 where would you go? What would be required to supply that?

17 A. Probably -- we would probably have to rely on
18 surface water treatment. I don't know of any other springs
19 close enough that we could nominally develop one. I think
20 we'd have to rely on surface water treatment.

21 Q. Do you currently have a surface water treatment
22 plant that would be capable of doing that?

23 A. Huntington owns a surface water treatment plant
24 in the mouth of the canyon. It's not operable. It would
25 take considerable expense to bring that on line and put it

1 in use.

2 Q. And you would need a new water right to do so
3 or at least a change application?

4 A. We would need a change -- yes, we'd need a
5 change.

6 Q. And that's not in place at this time?

7 A. No, it isn't.

8 MR. CARTER: Just for clarification, the water
9 treatment facility is set up to take water out of the
10 streams, so you would just have to change your point of
11 division? Is that what you're talking about?

12 THE WITNESS: It's set up to discharge out of
13 Huntington Creek.

14 MR. CARTER: Okay.

15 THE WITNESS: It has some problems with the division
16 of drinking water in the fact that it's what we called a
17 single-pass plant. It only has one flash mixer, one
18 flocculator, one clarifier, one filter. So it has some
19 problems. They like to have dual standby on all of those
20 things. So it would take some expense to bring that on line
21 and usable.

22 Q. BY MR. APPEL: So is it your conclusion as you
23 sit here today that there is no viable replacement water
24 source being provided by the Co-op?

25 A. That's correct.

1 Q. Okay. Thank you.

2 MR. CARTER: Mr. Hansen.

3 MR. HANSEN: I have a couple of questions. If this is
4 informal, if I could just make some comments on some things
5 that he said.

6 MR. CARTER: Certainly. And that's perfectly okay.
7 You don't need to cross-examine. That's fine.

8

9

EXAMINATION

10 BY MR. HANSEN:

11 Q. Mr. Leamaster, you pointed out this one
12 incident in late 1990, early 1991, where there was
13 apparently a large increase in the water flow together with
14 some contamination of the water; is that right?

15 A. Yes.

16 Q. I'd point out that in previous proceedings that
17 the details as to the changing of the water flow as to the
18 subsidence and quantities of contamination have already been
19 put into the record. Other than that single incident, has
20 there ever been any incident to your knowledge where the
21 quality of water coming from either Birch Spring or Big Bear
22 Spring has been adversely affected?

23 A. I probably shouldn't comment on Birch Spring
24 because I'm not familiar with all their records.

25 Q. I asked to your knowledge.

1 A. The incident that I mentioned in October of
2 1989, and other than that I don't know of any incidents on
3 Birch Spring.

4 Q. Okay. During that incident did the water
5 quality decrease enough to require you to take that spring
6 off line?

7 A. Again North Emery should answer that. But it's
8 my understanding that North Emery did have to take that
9 spring off line. They had oil and grease. They had
10 complaints from their customers and they had to remove that
11 spring from their system.

12 Q. Do you have any personal knowledge if that
13 happened? Do you know for yourself if it happened?

14 MR. APPEL: One question at a time, Mr. Hansen.

15 MR. HANSEN: It's repeating the same question. This
16 is informal. Let's not get caught up in those technical
17 form of objections.

18 MR. APPEL: And let's not badger witnesses. You asked
19 him a question.

20 MR. CARTER: This is getting way too formal.

21 MR. APPEL: You asked him a question. Give him a
22 chance to answer.

23 THE WITNESS: I was not personally there when that
24 happened. I've been advised by the authorities from North
25 Emery about the incident. I've read about it. I wasn't

1 personally there.

2 Q. BY MR. HANSEN: You testified that at one time
3 Birch Spring flow got as low as 76 gallons a minute?

4 A. Big Bear.

5 Q. Big Bear. I'm sorry. When did that happen?

6 A. That happened in May of 1995.

7 Q. And in the 17 months since then the spring flow
8 has increased to 148 gallons per minute?

9 A. That's correct.

10 MR. HANSEN: Mr. Carter, that is really the only piece
11 of new evidence that I heard throughout the entire course of
12 Mr. Leamaster's testimony. I would like to make a few
13 comments of what I did hear him say. I did hear him say
14 that Castle Valley right now does have a water treatment
15 plant already constructed that they're not using because
16 they don't need it at this point, suggesting that the need
17 isn't as great as what they say.

18 We've pretty well established that as far as
19 water quality there's only been one single incident, and
20 it's still not been clearly established as to the cause of
21 that incident. And again that is the water users, not the
22 Co-op Mine, that bears the burden. And anyway that incident
23 was already before the Division and it made its ruling.
24 We've heard nothing to suggest that there's anything new
25 about that incident that's changed the Division's decision.

1 Subsidence problems, breakout sinkholes,
2 there's been no suggestion that any of those things to the
3 extent that it's new information has had any impact on
4 spring flow.

5 And again there's been no suggestion to
6 discount the new information that this May 21, 1991 letter
7 suggested, that the recommendation was made that further
8 groundwater studies will need to be conducted to ascertain
9 impacts associated with additional coal seams within the
10 existing permit area. Those additional groundwater studies
11 have been done. The information on tridium studies in
12 particular as to Big Bear Springs is in the record.

13 We've heard nothing to demonstrate any
14 different conclusion than what came from that information
15 which shows that Big Bear Spring is new water; i.e., water
16 that has come since the air atomic testing has begun, and
17 all of the studies established that all of the waters
18 encountered is old water.

19 MR. CARTER: There were some studies, and I'm sure
20 we're going to get to those, in which underground samples
21 were taken prior to that.

22 MR. HANSEN: Mr. Leamaster mentioned icicles on the
23 cliff in January 1991. The information is already in the
24 record established during the tank seam hearings that those
25 icicles existed, have always existed. They've existed

1 before the mines began operating. They continue to exist.
2 The source of the water that comes from those icicles is
3 water that seeps out from the cliff face naturally through
4 Birch or otherwise. They come about as a result of the
5 natural water flow in the area and not as a result of
6 anything that the mine does. That's already entered in the
7 record.

8 Mr. Charles responded and it was also on the
9 record, whatever the facts and circumstances were that were
10 outlined in this May 17th, 1991 letter as to discharging the
11 old workings has been corrected. It's been corrected for
12 some time, and as Mr. Leamaster admitted himself, there's
13 been no subsequent incidents, nothing there to suggest any
14 change in the Division's decision regarding the permitting
15 rule.

16 That's pretty much the comments I have on
17 Mr. Leamaster's testimony. Except for his admission that
18 the spring flows have doubled in the last year and a little
19 bit more, there's really nothing new to the information that
20 was not already before the Division. I think Mr. Reynolds
21 has something he'd like to say.

22 MR. CARTER: Sure.

23 MR. REYNOLDS: I just draw one conclusion and it was
24 the conclusions that Earthfax drew of which Tom Munson was
25 referring to were based on the fact that at the time that

1 that spike in TDS occurred in Big Bear Spring, we had been
2 discharging in the old workings for some time, approximately
3 a year and a half. And that discharging in the old workings
4 was not discontinued until subsequent to this memo by Tom
5 Munson in which the Division requested us to discontinue
6 that.

7 Now the quality in Big Bear Spring, according
8 to our monitoring, by February of '91 it had recovered to
9 its normal quality in the sample that we took in our regular
10 water monitors. So Earthfax's conclusions to my knowledge
11 is it hadn't been the mine were based on that fact that
12 throughout that whole time when the spike improved, the
13 discharging of the old workings was continuous. It was
14 being done. It did not discontinue until several months
15 after the quality of water had already had been returned to
16 normal.

17 MR. CARTER: Let me -- I'm going to recap and see if
18 I grasp this, and certainly, Mr. Leamaster, certainly the
19 significance of this discussion with regard to the
20 discharging of the water into the old mine workings and the
21 icicles and the spike inflow and the quality problems at Big
22 Bear Spring all relate to the question as to whether or not
23 there's a hydrologic connection between the mine and Big
24 Bear Spring, and the determinations of the Division to date
25 had been that there is not one.

1 I mean the expression and concern that I think
2 I'm hearing, if we accept for a minute that the spike has
3 gone away and the water quality has cleared up, so there's
4 not a present problem at the spring, the concern is if there
5 is a connection, what happens when the mine is abandoned,
6 and if the works flood. I don't know that they would. But
7 the concern would be then what happens if the discharge
8 commences again at the cessation of mining operations.

9 MR. APPEL: That's part of it. There is a
10 connection. They said that they have been putting water in
11 there for a year and a half. I think the testimony if you
12 were to go back to 1991 was that they had not done that and
13 that the icicles in the cliff which Mr. Smith will get to in
14 a moment happens every year and it wasn't the result of any
15 turning of water. If you heard Mr. Munson, we went kind of
16 quickly through that, but Mr. Munson's conclusion was most
17 probably, and I think Dianne Nielson's conclusion in the
18 order was it came out in the outcroppings.

19 Our conclusion does not include Mr. Munson's
20 conclusion it most probably affected Big Bear Springs. I
21 heard Mr. Reynolds to say, well, yeah, we probably did that
22 but we haven't done it since then. Yes, you're right. You
23 haven't. The core issue is there is an interconnection
24 between the two.

25 This also will speak -- when we get to

1 experts -- speak volumes as to how water is transmitted
2 through the topography in that area, and it will become
3 quite clear if it's different than was suggested to the
4 Board, the conduit being the three tongues of the Star Point
5 sandstone that starts way up here on Gentry Mountain and
6 goes underneath all the mining. This particular evidence
7 becomes very important because it disabuses us of that
8 conclusion.

9 MR. CARTER: Am I correct in characterizing the
10 disagreement here, at least the actual disagreement?

11 MR. HANSEN: I believe so.

12 MR. CARTER: Make sure I grasp it.

13 THE WITNESS: Could I add one more comment too,
14 Mr. Carter? You talked about the water treatment fact and
15 the fact that, the fact that we have excess capacity in the
16 plant. I'd like to point out that in about 1980 we spent
17 considerable amount of money in upgrading all the lines to
18 those spring boxes. In 1977 those spring boxes themselves
19 were updated. We've spent several million dollars in
20 upgrading that system so that we could utilize those
21 springs.

22 Now the advantage is, as I testified early, all
23 we do to treat that is chlorinate those and they go into the
24 system. When we start taking water from the river then
25 we're completely involved in all of the surface treatment

1 rules, chemical treatment, all of the expenses of that
2 treatment. So it's a much more expensive process. And for
3 that reason we spent all the money to develop these springs
4 so that we didn't have to operate that plant. And it hasn't
5 operated for several years.

6 MR. CARTER: Let me -- I may have skipped over
7 something and I want to make sure. I'll characterize this
8 as a legal argument, and that is I take it that the water
9 users' assertion is that the permit should contain an
10 identified replacement source in the event replacement is
11 warranted. I won't get into the new policy act. But my
12 understanding is that there are replacement requirements in
13 Forest Service, attached stipulations to, at least to
14 federal leases. We won't get into that.

15 But let me just clarify. You're making an
16 assertion that there should be an identified replacement
17 method and source that's part of the permit, and there's not
18 one in there. And I think there's a legal question.

19 MR. SMITH: Yes, that's right. That's exactly our
20 assertion, that under all the laws you talked about that's
21 required. And we pointed out that that's an argument that's
22 also before the Supreme Court and it's also the subject of a
23 noncompliance letter that's currently been issued by the
24 Office of Surface Mining to DOGM that has not as I'm aware
25 of been resolved at this point. Maybe --

1 MR. CARTER: Yeah. The 732 letter. We won't get into
2 that too far. I guess there's some -- there could be
3 differences of opinion about what that letter has directed
4 us to do. But the Division is interpreting that letter as
5 directing us to incorporate into the statute of the State of
6 Utah and into the rules of the Board provisions which would
7 implement the energy policy act amendments requiring water
8 replacement.

9 MR. SMITH: Yeah. And that's a --

10 MR. CARTER: That means in the large --

11 MR. SMITH: Right. And we think that means they have
12 to identify it because it's like waiting till the fire's
13 burned the house down and then saying where's the nearest
14 fire plug. You've got to have the fire plug there so that
15 when the fire starts you can put out the fire. That's our
16 little analogy that we'll give to the Division here.

17 MR. CARTER: Okay. I just want to make sure I
18 understand the argument.

19 MR. SMITH: I have a couple more. I think something
20 was brought up in the response by Co-op that we'd like to
21 have clarified by this witness.

22
23 EXAMINATION

24 BY MR. SMITH:

25 Q. I'm showing the witness two photographs, two

1 copies of photographs that were taken of the -- this is the
2 icicle event. To try not to make this real formal, I'll
3 have him do them at the same time instead of one of them.
4 We'll save some time and ask if you can identify these
5 photographs?

6 A. Yes. These photos are in the localities of the
7 Big Bear Spring in the ledges above the spring, and they
8 show the icicle formation that we've referred to.

9 Q. And I take it one's a close-up and one's a
10 wider shot --

11 A. Yes, yes, that's right.

12 Q. -- of the same formation?

13 A. Same general area.

14 Q. Were you there when these photographs were
15 taken?

16 A. Yes, I was. These were taken by our
17 hydrologist Bryce Montgomery, and I was with him at the time
18 these were taken.

19 Q. What year were those taken?

20 A. They were taken in 1991. I think it was
21 January of 1991.

22 Q. That's the area of the event that we've been
23 talking about?

24 A. Yes.

25 Q. Is icicles that are shown here, is that a

1 common -- let me back up. I take it you're familiar with
2 this area of Huntington Canyon?

3 A. Yes, I am.

4 Q. Have you had opportunities to visit that
5 frequently during winter months?

6 A. Yes.

7 Q. Over what period?

8 A. Ever since I've been with the District and
9 we've been operating those springs. And it's been close to
10 19 years.

11 Q. And are icicles similar to what are depicted on
12 the photographs, is that a common occurrence in that
13 location in Huntington Canyon?

14 A. It is not. That's the only time we've seen it,
15 and that's what drew our attention to it and why we took the
16 pictures. We've never seen it before and we've never seen
17 it since.

18 Q. Okay. If you'd like I can offer these into
19 whatever evidence thing we are doing. I'll submit those.

20 MR. CARTER: The Division looks at these things I
21 think at the Division's peril, not to any prejudice to the
22 parties.

23 MR. SMITH: I'll go ahead and submit them.

24 MR. APPEL: We should probably mark them as something.

25 MR. SMITH: You can mark them as whatever you want to

1 do to identify them.

2 MR. CARTER: I guess since we're keeping a record, did
3 you --

4 MR. HANSEN: I don't need to see them.

5 MR. CARTER: Okay.

6 MR. HANSEN: I would point out that there is an
7 evidentiary dispute already in the record as to whether or
8 not that's an isolated incident. We've put on evidence and
9 we can tell Charles or Kim or Wendell to testify that that
10 is a regular occurrence in the area.

11 MR. CARTER: If you can refer me to, if that's part of
12 the record that's already been made, if you can just refer
13 me to it.

14 MR. HANSEN: It was in the tank seam hearing. I
15 couldn't give you page and line right now.

16 MR. CARTER: What I'll do, I'll mark these No. 1 and
17 No. 2. Just so that the record -- just so the record's
18 clear, why don't you mark the wider shot as No. 1, and the
19 more close-up one as No. 2, and that way we'll be able to
20 keep track of them.

21 Okay. What I'll do is make a note to myself to
22 examine the records that we've got to see what discussion
23 there's been and what testimony there's been with regard to
24 the icicles, their origin and significance. Okay. Thank
25 you.

1 Anything else from Mr. Leamaster? Again this
2 is not a call, recall, we just -- you have a series of
3 points that you'd like to establish and you're going to use
4 your witnesses to do that.

5 MR. SMITH: Right.

6 MR. CARTER: I'll allow the Co-op to respond as those
7 come forward and then certainly allow Co-op to put on
8 whatever witnesses it would like to in rebuttal. Okay.
9 Thanks.

10 MR. SMITH: Thank you. At this time we'd like to call
11 or ask -- I shouldn't say call -- ask Mr. Jack Stoyanoff to
12 come up to the table.

13 MR. CARTER: Since we are swearing these witnesses,
14 let's go ahead and do that.

15
16 JAN STOYANOFF,

17 called as a witness, for and on behalf of the
18 Objectors, being duly sworn, was examined and
19 testified as follows:

20
21 EXAMINATION

22 BY MR. SMITH:

23 Q. To make sure we have a clear record, could you
24 just state your name and address for the record, and you
25 better spell your name for the court reporter.

1 A. Okay. My name is Jan Stoyanoff.

2 S-t-o-y-a-n-o-f-f. And I live at 235 East Highway 155 in
3 Huntington, Utah.

4 Q. And are you employed at the current time?

5 A. Yes, I am.

6 Q. And what employment is that?

7 A. I work for North Emery Water Users.

8 Q. And what's your position with North Emery Water
9 Users?

10 A. I'm the operator/manager.

11 Q. And how long have you been employed within that
12 capacity?

13 A. For about 12 years now.

14 Q. Okay. So back to about 1979, 78?

15 A. About '84.

16 Q. Oh, '84. Oh, that's right. I'm having a hard
17 time with my years.

18 MR. APPEL: It will get worse.

19 MR. SMITH: I did turn 40 this year, so I -- enough
20 of that.

21 Q. And what's your duties with North Emery Water
22 Users Association?

23 A. Well, mainly just to maintain the system and
24 make sure it operates and that we're in compliance with all
25 the rules and regulations.

1 Q. Tell me what North Emery -- what does it do?

2 A. We provide culinary water for approximately,
3 oh, 300 -- between 300 and 320 connections, and then we
4 also provide livestock water to another 100 or so
5 connections. And then we have probably about 10 or 15
6 industrial connections on our system.

7 Q. And what area of the Emery County do you serve
8 culinary water?

9 A. We serve all the outlying areas around the
10 towns and cities in the northern part of Emery County.

11 Q. So that would be the areas around Cleveland and
12 Elmo and outside of Huntington?

13 A. Yes, mm-hmm.

14 Q. So if they're not in the cities and served by
15 the Special Services District, they're served by you?

16 A. Right.

17 Q. Are there any other providers for culinary
18 water in that area?

19 A. No.

20 Q. So these people rely solely on North Emery
21 Water Users Association?

22 A. Yes.

23 Q. And I take it that you're a nonprofit
24 corporation?

25 A. Yes.

1 Q. That's supported by the people who you serve?

2 A. That's correct.

3 Q. And do you have any water sources near the
4 Co-op mine that we've been discussing?

5 A. Yes, we do.

6 Q. And what source is that?

7 A. The Birch Springs. We also have Rilda Canyon
8 Springs across the river on the other side, right across
9 from Birch Spring.

10 Q. Okay. And can you just kind of -- I know
11 we're going to take a field trip and go look at that this
12 afternoon, but can you just for the record kind of explain
13 where Birch Spring is.

14 A. Well, it sits between the old workings of the
15 Co-op mine and the new workings, both those canyons up
16 there. It kind of sits in between them.

17 Q. Kind of right on a point in Huntington Canyon?

18 A. Mm-hmm.

19 Q. Okay. And for the record we will go look at
20 that today, and I'm sure we'll also be pointing at maps.
21 And Birch Spring, is that -- how important of a water
22 source is that to North Emery Water Users Association?

23 A. Oh, it's very important. All our springs are
24 really important to us. We're, for an example here, this
25 year if we hadn't had that new treatment plant and tank up

1 the canyon, we would have, you know, had to ration our
2 water, because this year was a real dry, dry summer, and hot
3 summer, and so our big producing spring, Rilda Canyon
4 Spring, never came up to its peak, you know. It come up to
5 about 300 gallons a minute and just leveled out. So there
6 was through the hot months of the summer, July and August,
7 there was a time we were using all our water to keep our
8 customers in water.

9 Q. I see. When you first began working with North
10 Emery Water Users, what kind of production did you see
11 coming out of Birch Spring as far as how much water it was
12 providing to the North Emery Water Users Association?

13 A. 70 gallons a minute is what it was producing.

14 Q. And while you've been working for North Emery
15 Water, has work been done to develop that spring?

16 A. Yes, mm-hmm. The major work was done just
17 before I started to work for them, and they went in there
18 and developed it. And at that time they weren't able to
19 capture all the water. And so they never turned it into the
20 system. And then right after I started to work for them we
21 hired a contractor and went back up there and went down to
22 try to capture that water. And when we got down we couldn't
23 find it. It wasn't there any longer. And so we went ahead
24 and closed things up, and then went through the procedures
25 and turned it into the system.

1 Q. Okay. And we've been talking about this event
2 that occurred right around 1990. You heard Mr. Leamaster
3 talk about it. Are you familiar with that event that we've
4 been talking about, the high flow spike event?

5 A. Yes, I am.

6 Q. And can you just take a minute and describe
7 what happened from your perspective at that time?

8 A. Well, we started getting phone calls from our
9 customers up the canyon that water was really dirty and
10 contaminated, so at that time I went up the canyon and I
11 started looking for potential problems, and the road
12 department had been up there and they'd broken one of our
13 air vacs, and so we thought that was the problem. But it
14 didn't clear up.

15 And so it wasn't until the next day that I
16 discovered that the Birch Springs area was -- the whole
17 area, even the cliffs, you know, where there wasn't any
18 water coming out before, there was flowing quite a bit of
19 water. We measured that, and it was about 120 gallons a
20 minute flowing down the stream there at Birch Springs. And
21 then our spring had gone from 40 gallons a minute to about
22 110 gallons a minute.

23 And we had to turn the spring out because it
24 was -- the whole bottom of the collection box was full of
25 sediment, sand, from the dirty water.

1 And it was out -- it was a good thing it
2 occurred in October because if it would have occurred in the
3 summer it would have run people out of water. Because it
4 was that time of the year we were able to turn it out, and
5 it took I think about three months for it to -- the flow to
6 finally drop back down to normal, and then it was probably
7 another three months before we were able to turn it in back
8 to the system.

9 Q. So you were unable to use that spring for about
10 six months?

11 A. Correct.

12 Q. And that's because of water quality problems?

13 A. Yes, mm-hmm.

14 Q. Besides the dirtiness, did you do any tests or
15 any other tests on the water to see what was in the water at
16 that time?

17 A. Yes, we did.

18 Q. And what did that -- those tests reveal?

19 A. There was both oil and grease and fecal
20 coliform in it.

21 Q. Okay. Now since that event you've been able to
22 put Birch Springs back into your system?

23 A. Yes, uh-huh.

24 Q. And at the current time how much is Birch
25 Spring producing?

1 A. 21 gallons a minute.

2 Q. So that's approximately half or less than half
3 of what it was doing -- let's see, let me back up. It was
4 doing about 70 gallons a minute when you first started
5 working with North Emery Water Users?

6 A. Mm-hmm.

7 Q. And now it's down to 21 gallons a minute.

8 A. Mm-hmm.

9 Q. This last year was a pretty good precipitation
10 year, wasn't it?

11 A. Mm-hmm.

12 Q. Did the spring come up?

13 A. No, it hasn't come up at all.

14 Q. It's just stayed down?

15 A. Yes, mm-hmm.

16 Q. Now I would assume that you're fairly familiar
17 with Huntington Canyon.

18 A. Yes, mm-hmm.

19 Q. Do you have opportunities to go up there
20 oftentimes during the winter?

21 A. Mm-hmm.

22 Q. I want to show you what we've marked as
23 Exhibits 1 and 2. These are the same photographs that's
24 been given to the Division. Do you recall seeing the
25 icicles during 1990, 91, when these photographs were taken?

1 A. Yes, mm-hmm.

2 Q. Was that an unusual sight?

3 A. Yes.

4 Q. Why so?

5 A. Never seen it before.

6 Q. How about since?

7 A. No. Never seen it since either.

8 Q. So that was the only year you saw icicles like

9 this that's depicted on these photographs?

10 A. Yes, mm-hmm.

11 Q. If there was another water quality problem with

12 Birch Spring, how would that first be discovered if it

13 wasn't at this time you're doing one of your regular

14 samples?

15 A. Through complaints to our customers.

16 Q. So it would be after the customers actually got

17 it and maybe drank that water?

18 A. Mm-hmm.

19 Q. And then you'd have to go and manually

20 disconnect that from your system?

21 A. Yes.

22 MR. SMITH: I believe that's all the questions I

23 have. I don't know if Mr. Appel may have some questions for

24 this witness.

25 MR. APPEL: No, I don't.

1 MR. CARTER: Anything, Mr. Hansen?

2

3

EXAMINATION

4 BY MR. HANSEN:

5 Q. Okay. Mr. Stoyanoff?

6 A. Yes.

7 Q. You said regarding this 1991 incident you found
8 three forms of contaminants in the spring box; is that
9 correct?

10 A. Yes.

11 Q. It was oil, grease and fecal coliform? Can you
12 tell me what that third one is?

13 A. It's human or animal waste.

14 Q. Okay. To your knowledge does coal mining
15 generate that waste?

16 A. I don't know. I've never been a coal miner.

17 Q. Were you able to determine whether it was human
18 waste or animal waste?

19 A. No.

20 Q. Did you do any studies to try to find out?

21 A. No.

22 Q. You said that this year that your Rilda Spring
23 didn't come up to peak; is that correct?

24 A. Correct.

25 Q. And that's despite your testimony that we had

1 good precipitation this year?

2 A. Yes.

3 Q. Are you making any claim that Co-op's mining
4 affected Rilda Spring?

5 A. No.

6 Q. You also talked about regarding this 1990, 91
7 incident that the department had broke an air vac. Did I
8 hear that right? I didn't understand what you said there.

9 A. An air vac, yes.

10 Q. What is that?

11 A. It's a device that lets air in or out of the
12 water system as needed.

13 Q. Okay. How long did it take between the time
14 they broke that device and the time it was repaired?

15 A. Oh, just a matter of a couple hours.

16 Q. I don't have anything else.

17 MR. CARTER: Okay. Just let me -- oh, I'm sorry.

18 MR. HANSEN: This is informal. Do any of you have
19 anything you need to ask him?

20 THE WITNESS: May I make a comment about our Rilda
21 Springs?

22 MR. CARTER: Certainly.

23 THE WITNESS: Our Rilda Springs are affected by
24 runoff. They're what -- they're called shallow springs, and
25 so depending on how, you know, the weather is and stuff like

1 that, our Rilda Springs vary from 60 gallons a minute to 500
2 gallons a minute every year. Their low is about 60 and
3 their high is about 500. And all our other springs on the
4 system are what are called deep springs, and so they're not
5 affected immediately by runoff. It takes a little while,
6 so --

7 MR. CARTER: Maybe this is inappropriate to ask, but
8 I'll just go ahead and ask and we'll go look at it. Is
9 Birch Spring, you were saying Birch Spring you deemed to be
10 a deep spring. It seems to me we've had some discussion at
11 some point or there's been evidence on the record about
12 whether the source of water for that spring is primarily
13 colluvial or alluvial flow or whether it's bedrock flow.
14 And maybe there's going to be discussion of that later on.
15 But your understanding is that it's a deep spring rather
16 than a shallow alluvial spring?

17 THE WITNESS: Yeah. Just because we don't see the
18 dramatic increase during the runoff.

19 MR. CARTER: Changes in flows. Okay.

20 MR. SMITH: I have a couple questions on Rilda
21 Springs.

22 MR. CARTER: Sure.

23

24

FURTHER EXAMINATION

25 BY MR. SMITH:

1 Q. My understanding there was a potential Energy
2 West -- let me back up. Rilda Springs are across the canyon
3 on the other side of Huntington Canyon?

4 A. Yes, uh-huh.

5 Q. So they're not close to the Co-op mining
6 operations?

7 A. No.

8 Q. But they are adjacent to mining operations by
9 Energy West; isn't that right?

10 A. Yes, uh-huh.

11 Q. There was a concern that Energy West's mining
12 operations were going to affect Rilda Spring. Wasn't that a
13 concern a few years ago?

14 A. Yes, it was.

15 Q. And what did Energy West do to address that
16 concern?

17 A. Well, they came to us and asked if they could
18 start sitting in our board meetings and mitigating our water
19 replacement for that area. First they wanted to run tests,
20 and so they spend several thousand dollars doing a draw down
21 test on that area, drilled wells up and down there and
22 pumped the alluvial down to determine how much they would
23 affect the springs and stuff. And at that time they
24 determined that they might affect, take about 20 percent of
25 the water, but they were more concerned about contamination

1 and such.

2 And so over the years we came up with a plan,
3 and what they've done is they built us that slow sand filter
4 plant in Huntington Canyon and that water tank for
5 mitigation for that water replacement, so --

6 Q. Okay. Just another kind of clarification
7 question, so I guess just to follow up, so if Rilda Canyon
8 Springs had been affected, then that's the mitigation in
9 place for that, if it's been affected by Energy West mining?

10 A. Yes, mm-hmm.

11 Q. When you mentioned that the air vac had been
12 knocked over, knocked over, was that upstream or downstream
13 on your system from Birch Spring?

14 A. Downstream.

15 Q. So the contamination you saw up at Birch Spring
16 could not have been affected by that air vac?

17 A. No. Even if it was upstream it couldn't have
18 been affected because, you know, that spring doesn't enter
19 the main pipeline until it got downstream from the spring,
20 so --

21 Q. So you were able to determine that the
22 contamination was actually at the spring?

23 A. Oh, definitely.

24 Q. And not in your line somewhere?

25 A. Yeah. As soon as I turned that spring out then

1 things started clearing up. And when you turned it out the
2 overflow, you know, it was just dirty water coming out of
3 there. It had a lot of sand in it.

4 Q. Okay. That's all the questions I have.

5

6

FURTHER EXAMINATION

7

BY MR. HANSEN:

8 Q. Mr. Stoyanoff, you said that Birch Spring once
9 produced about 70 gallons per minute; that North Emery went
10 in and developed the spring in early 1980s; and that when it
11 was developed it dropped down into the 20s in terms of
12 gallons per minute, below 30 gallons per minute?

13 A. No, I didn't say that.

14 Q. That's what I understood you to say. Could you
15 clarify what you said then?

16 A. Birch Spring was developed before I started to
17 work for them, and we went in to redevelop it because there
18 was -- when they developed it they couldn't capture all the
19 water. There was a good stream of water that was still
20 flowing through the limestone down underneath, and so they
21 wanted to go ahead and capture it all. So we hired a
22 contractor, went back up there and dug down. And when we
23 got there that water wasn't there anymore. So we went ahead
24 and covered it up and went through the procedures to get it
25 turned into the system. And at the time we turned it in it

1 was 70 gallons a minute.

2 MR. CARTER: So that was after the development work
3 was done it was 70 gallons.

4 THE WITNESS: After, mm-hmm.

5 MR. CARTER: When was that, just roughly, in terms of
6 time? Read the hydrographic chart?

7 THE WITNESS: In the early 80's.

8 MR. CARTER: Okay. Before -- never mind. I was
9 working elsewhere at the time and we had water problems too.

10 MR. HANSEN: Mr. Carter, I think -- again I can't
11 refer you to page and line at the Board hearing testimony,
12 but what Mr. Stoyanoff just said contradicts the evidence
13 that the water users put on in that hearing when they stated
14 that as a result of the development they did lose a
15 considerable amount of water coming out of Birch Spring.
16 And I'd ask you to go back in and find that information in
17 the record.

18 MR. CARTER: I will do that.

19 MR. HANSEN: Thank you.

20 MR. APPEL: My memory of that proceeding just for the
21 record is that the reference to worse flows after
22 development was in relationship to Rilda Springs not Birch
23 Spring. But the record will tell us that.

24 MR. SMITH: Yeah, the record will show what it says.
25 I certainly don't have that same recollection Mr. Hansen has

1 BY MR. SMITH:

2 Q. Mr. Jensen, could you state your name and
3 address for the record?

4 A. I'm Kay Jensen, and I live in Cleveland at 1055
5 North Highway 155.

6 Q. And are you employed?

7 A. I'm self-employed at this time. I formerly
8 taught school, but I've retired from that.

9 Q. And do you have any position with the
10 Huntington-Cleveland Irrigation Company?

11 A. I'm the president of the Huntington-Cleveland
12 Irrigation Company at this time.

13 Q. And do you have any position with North Emery
14 Water Users Association?

15 A. I'm on the North Emery Water Association Board
16 at this time also.

17 Q. So I take it you get your culinary water from
18 North Emery Water Users Association; is that correct?

19 A. Yes, being in the outlying area, we -- that's
20 where we receive our water.

21 Q. And you get your irrigation water from
22 Huntington-Cleveland Irrigation Company, I take it?

23 A. Yes.

24 Q. And does Huntington-Cleveland, the water that
25 we're talking about by Castle Valley Special Services

1 of it. I believe Mr. Stoyanoff testified at the last
2 hearing and said basically the same thing. And we're just
3 trying to put on our background information.

4 MR. CARTER: Okay. I will take a look, though, and
5 dig out and see what previously had been told us and see if
6 this is new or different or not.

7 MR. SMITH: You know, I don't know if it's my place to
8 suggest this. I suggest it's 10:00 o'clock. I think it's
9 time for a ten-minute break.

10 MR. CARTER: I think our reporter would like a break.
11 I think that's fine. Let's do that. We'll reconvene at ten
12 after.

13 (Recess taken.)

14 MR. CARTER: Let's return to the record. I think
15 Craig Smith was going to present another witness.

16 MR. SMITH: Yeah. This time we'd like to call -- we'd
17 like to call our next witness, and his name is Kay Jensen,
18 if he could come forward.

19

20 KAY JENSEN,

21 called as a witness, for and on behalf of the
22 Objectors, being duly sworn, was examined and
23 testified as follows:

24

25

EXAMINATION

1 District, North Emery Water Users, who owns those water
2 rights or holds those -- I should say correctly -- holds
3 those water rights?

4 A. Huntington-Cleveland Irrigation Company would
5 hold those rights.

6 Q. So its interests in this proceeding is through
7 its holding of the water rights of the sources Birch Spring
8 and Big Bear Spring; is that correct?

9 A. Yes. The sources of those springs are the
10 sources for those water companies, North Emery and Castle
11 Valley.

12 Q. Okay. And if you have a share of stock in
13 Huntington-Cleveland Irrigation Company, how much water does
14 that share of stock entitle you to take?

15 A. Primary stock in class A stock is approximately
16 one third of an acre foot in normal years.

17 Q. So you have -- if you had three shares, you
18 could in a normal year take an acre foot of water?

19 A. That's correct.

20 Q. When we say normal years, is it typical for
21 that whole share to be recognized by delivery of a third of
22 an acre foot of water?

23 A. That's typically correct.

24 Q. How about the last few years? Have you been
25 able to provide all the water users with all their full

1 allotments to their shares?

2 A. We've had problems providing all the shares.
3 Even this year we've had some problems. In fact we -- with
4 what was allocated we thought we would end up possibly 4,000
5 acre feet short.

6 Q. So it's not --

7 A. It may still end up that short if everyone
8 calls for their water.

9 Q. So there isn't any unallocated water in
10 Huntington Canyon that you're aware of?

11 A. No, there is no water that isn't allocated.

12 Q. And all water that's there is being put to
13 beneficial use that the company has the right to use?

14 A. That's correct.

15 Q. And even with that you're still short of water?

16 A. That's right.

17 Q. And you're not aware of any new springs or
18 water sources that is in the area of Huntington Canyon that
19 someone doesn't have a water right on?

20 A. No, not aware of any.

21 Q. Okay. That's all the questions I have for
22 Mr. Jensen.

23 THE WITNESS: Thank you.

24 MR. CARTER: Okay. Mr. Hansen, does Co-op have
25 anything?

1 Q. And a CHEA?

2 A. The CHEA.

3 Q. Have you ever heard of a CHEA?

4 A. I've heard of it. I'm not exactly sure what it

5 stands for.

6 MR. CARTER: A cumulative hydrologic environmental

7 assessment. And that's something the Division does with the

8 PHC.

9 THE WITNESS: With the PHC.

10 Q. BY MR. APPEL: What was the name of that mine?

11 A. The Colorado? It is the Dry Creek Underground

12 Mine affiliated with the Seneca 2 Mine and the Peabody Coal

13 Company.

14 Q. And in the course of putting together the

15 hydrologic information, what did you do in Colorado?

16 A. We assembled a year's worth of baseline data

17 from eight different wells in the area that was to be mined

18 based on the mine plan, analyzed surface flows, recharge

19 patterns, precipitation, and then attempted to predict based

20 on those the groundwater flow based on the different

21 information we related to mining.

22 Q. Have you had a similar experience in -- this is

23 the Wasatch Plateau above us?

24 A. Yes.

25 Q. Have you had a similar experience in the

1 MR. HANSEN: I don't.
2 MR. CARTER: All right. Thank you.
3 THE WITNESS: Thank you.
4 MR. APPEL: For our next witness we would call Peter
5 Nielsen.

6
7 PETER NIELSEN,
8 called as a witness, for and on behalf of the
9 Objectors, being duly sworn, was examined and
10 testified as follows:

11
12 EXAMINATION

13 BY MR. APPEL:

14 Q. Could you spell your name, please, sir?

15 A. Peter Nielsen, N-i-e-l-s-e-n.

16 Q. With whom are you employed?

17 A. I currently work with SECOR, International,
18 Incorporated in Salt Lake City.

19 Q. How long have you worked with them?

20 A. Three years.

21 Q. In what capacity do you work for them?

22 A. I work as a principal hydrogeologist in various
23 hydrology related jobs, groundwater studies.

24 Q. And before that where did you work?

25 A. I worked at the Cypress Plateau Mine.

1 Q. Where is that located?

2 A. It's located in the old town of Wattis north of
3 the area that we're looking at right now.

4 Q. And what were your responsibilities and duties
5 in that employment?

6 A. Duties there was to do hydrogeology, mine
7 permit maintenance, assist in all environmental aspects of
8 the mine.

9 Q. And before that where did you work?

10 A. I worked in Los Angeles with the different
11 environmental company, Montgomery Watson, doing groundwater
12 studies.

13 Q. Have you ever had any other experience working
14 in the federal and state permitting process with respect to
15 coal mines?

16 A. Yeah. I permitted a coal mine in northwestern
17 Colorado, generated the hydrologic description and the
18 probably hydrologic consequences for an underground coal
19 mine that was to be developed.

20 Q. Is that the same process that the Co-op was
21 required to go through for their renewal?

22 A. Yes.

23 Q. And that's a PHC?

24 A. Yeah. Probable hydrological consequences,
25 yeah.

1 Wasatch Plateau?

2 A. That's also what I did in Cypress was to help
3 with this job permit maintenance, did groundwater sampling,
4 looked at analytical results from samples, fracture mapping,
5 handled permits.

6 Q. And that was so that Cypress could mine?

7 A. Yes. That was so we could keep mining coal,
8 yeah.

9 Q. Under DOGM's scrutiny?

10 A. Yes.

11 Q. Okay. Do you have a bachelor's degree?

12 A. I have a bachelor's degree in geology from
13 Brigham Young University.

14 Q. When did you receive that?

15 A. 1987.

16 Q. Any further education?

17 A. I have a masters in geology in the same school
18 that I received in 1992.

19 Q. How many years of experience do you have
20 working in the stratigraphy of the Wasatch Plateau?

21 A. Beginning with my undergraduate work probably 8
22 to 10 years now plus my experience at the coal mine.

23 Q. And how many years were you working at the coal
24 mine?

25 A. Just under two years.

1 Q. Tell us a little bit specifically about what
2 you were required to do in the permitting process for the
3 Cypress Mine?

4 A. When I was there, the permit for the area we
5 were mining in, Gentry Ridge, was already established, so we
6 were doing maintenance, meaning we had to develop a
7 hydrologic budget for water flowing into the mine, how much
8 we discharged, how much we used. We attempted to do that.
9 Plus we were in the process of permitting what we call the
10 northern area to get that so we could get the permit to
11 finish longwalling up there after we had longwalled down
12 Gentry Ridge.

13 Q. Where is that mine located in relationship to
14 the Co-op mine?

15 A. That mine is located on Gentry Ridge, which is
16 about, oh, three, four miles north, almost exactly north of
17 the Co-op mine.

18 Q. So you have a working familiarity with the
19 stratigraphy of this area?

20 A. Yes.

21 Q. At any time that you want to move to maps or
22 whatever, please feel free to do that.

23 A. Okay.

24 Q. Keep reminding myself this is informal. Maybe
25 I'll even loosen my tie some more. For that purpose, maybe

1 what we should do is mark some additional exhibits, and then
2 he will be moving back and forth between them. But for
3 purposes of identification, maybe what we should do first is
4 mark the large map of the area.

5 MR. CARTER: These maps are not part of the Division's
6 records currently?

7 THE WITNESS: No. These are new maps.

8 MR. CARTER: This is fine. I just wanted to find out.

9 MR. APPEL: This is new information.

10 MR. CARTER: All right.

11 THE WITNESS: I don't know how we best do this, but --

12 Q. BY MR. APPEL: Let's mark the map as
13 exhibit -- how many maps do you have?

14 A. Well, I've got two new ones, Plate 1 and Plate
15 2 here. And then an existing one from the Co-op permit that
16 we'll use.

17 Q. Why don't we refer to the maps as Exhibit 3 and
18 then subdivide them as Plate 1 and Plate 2.

19 MR. CARTER: All right. It looks like you can put
20 them up over here. You'll have to speak loudly so that we
21 can get everything on the record.

22 MR. APPEL: The next exhibit I think -- let's just
23 get this all done now, if it's okay with you.

24 MR. CARTER: All right.

25 Q. BY MR. APPEL: Will be some series of charts

1 and graphs. Let's make that Exhibit 4. The first page of
2 it is a Stiff Diagram.

3 A. Is this Exhibit 4?

4 Q. Yeah. I think I'll have you do that, rather
5 than me doing it. All right. Let's go back to the map.
6 Jim, I think you're going to want to take a look.

7 A. The co-op mine is located down here near
8 Huntington Canyon. The mine I worked at was the Cypress
9 Plateau. Star Point Mine is located right up here at Gentry
10 Ridge just at the top of this map. It's up in this area,
11 right here more. Unfortunately this map didn't cover it,
12 but it's located at the top of the map.

13 Q. There's a fracture zone in there somewhere.
14 Can you tell me where this is?

15 A. That is the fracture zone. This area right
16 here is what is called Pleasant Valley Fault Zone. It was a
17 large continuous series of normal faults that begin way up
18 in the area near Scofield Lake continuing down through
19 Huntington Canyon and finally discontinued down in Menko
20 shale on the other side of East Mountain.

21 This right here is the Pleasant Valley Fault.
22 This one here is what we call the Bear Canyon Fault, and
23 then there's a whole series of normal faults inside of that,
24 that fault zone.

25 Q. BY MR. APPEL: Where is the Co-op Mine?

1 A. The Co-op Mine permit boundary is right here
2 now, that little shading I've got around there.

3 Q. And the springs?

4 A. And the springs, Big Bear is located right here
5 and Birch is located right there.

6 Q. Are there any other springs you want to show us
7 the location of?

8 A. Yeah, the other springs that we sampled as part
9 of this investigation is Upper Tie Fork Spring owned by
10 Castle Valley Special Services right here, the Lower Tie
11 Fork Springs, this one right over here called Little Bear
12 Springs on the other side of Huntington Canyon. We sampled
13 Birch and Big Bear and then we sampled three springs up on
14 top of Gentry Mountain along this fault zone over here, the
15 Bear Canyon Fault, that come out of the northern formation
16 on top this one as well as coming out of the North Horn
17 right on the top of Bear Canyon.

18 Q. You were retained by the objectors to do what?

19 A. To investigate the groundwater flow patterns in
20 this area and determine if underground mining in this region
21 has impacted these two springs.

22 Q. Tell us a little bit about the methodology you
23 employed including site visits. What did you do to --

24 A. What we did as part of the study is we visited
25 all the springs and determined the geologic setting for

1 discharge, fault-related bedding, fault-related, something
2 like that; where its location was in reference to the mine.
3 We also collected water samples for major ions as well as
4 for stable and radiometric isotopes.

5 Q. Okay. Let's talk a little bit about the area
6 of geology.

7 A. On the Wasatch Plateau, and this line I have
8 right here on this map, this heavy line, this is the top of
9 Star Point sandstone. It's considered sort of a marker bed
10 for this area because it's easy to recognize and it's fairly
11 consistent throughout the area. The only thing that really
12 changes in Star Point sandstone is the lower two tongue
13 members, Storrs, and the other one, they become
14 progressively more silting and eventually perch out. But
15 Spring Canyon is consistent all the way from Price Canyon
16 down south. It's there.

17 So that's the one that is generally mapped by
18 all the people that have done investigations in this area is
19 the top Star Point sandstone. The area is relatively flat.
20 It has a dip in the whole ranging anywhere from two to four
21 degrees slightly from the southeast. The stratigraphy
22 begins about the Menko shale down at the bottom. It forms
23 the hills. At the base of the canyon you typically see the
24 bluish shaley hills.

25 The next unit is the three members of Star

1 Point sandstone, the Panther, the Storrs, and the Spring
2 Canyon. They form cliffs with interbedded shaley tongues of
3 Masuk shale.

4 Right on top of the Star Point sandstone is the
5 Black Hawk formation. And in the lower Black Hawk formation
6 is where the Hiawatha is, and tank seams are located in the
7 lower 300 feet. That's pretty common throughout the whole
8 area. Most of the mineable coal comes out of the bottom
9 half of the Black Hawk formation.

10 On top of the Black Hawk formation is the Price
11 River formation and Castlegate sandstone. The Price River
12 is a coarse grain sandstone typically with sandstone beds
13 that perch in and perch out so it has the potential to
14 create perched aquifers.

15 The next unit above that is the North Horn
16 formation, which consists of sandstones and shells and
17 limestones. And it also is considered a perched aquifer
18 formation in this area.

19 Now studies by Lines from the USGS down in this
20 area over here in 1985 and by Danielson in the Huntington
21 Creek drainage and down in the Cottonwood drainage and by
22 Waddell which studied the whole area all concluded that the
23 Star Point sandstone and the lower Black Hawk formation is
24 the regional big aquifer in this area. Everything moves
25 vertically down to that. That's where its recharge comes

1 from is vertically down through this area.

2 Lines in this area concluded that the North
3 Horn aquifer, the North Horn formation has a perched aquifer
4 that typically the springs in North Horn have high
5 discharges in the spring and either become seeps or have
6 small flows or dry towards the later month. That's typical
7 of a perched aquifer. It just doesn't have the drainage
8 area to maintain it.

9 The springs that we sampled that have high
10 flows, like Big Bear, Birch, Little Bear and Lower Tie Fork,
11 all issue out of the Star Point sandstone right at the
12 contact with the Menko shale, and typically they're
13 associated with a predominant fracture, a fracture zone or a
14 major fault. And it's usually where the fault intercepts
15 the Menko shale in this area. Right here you can see it's
16 been faulted out. It intercepts. You've got a big
17 fracture, huge fracture. Big Bear's got a predominant
18 fracture. Same with these springs here. They issue along
19 the fault.

20 Now the people that investigated that in this
21 area and in the Wasatch Plateau in general state that that
22 vertical unsaturated flow is a primary recharge to the Star
23 Point sandstone in Lower Black Hawk.

24 Q. What does that mean, vertical unsaturated?

25 A. That means that you've got a perched aquifer up

1 here to the North Horn formation that saturates with water
2 during the spring runoff period, and you get both horizontal
3 flow which issues out of springs, but you also get vertical
4 flow down through the fracturing. That's the definition of
5 a perched aquifer. It's a water elevated above an
6 unsaturated zone. That's the only thing it means.

7 Q. But it doesn't just sit there. It's moving?

8 A. No, it's moving. It only means it's elevated
9 by some confining layer. The confining layer. It's not
10 unusual for a confining layer to have some sort of vertical
11 leakage factor. In this area it's just the fractures.

12 We did a fracture measurement survey down here
13 as well. We measured a whole set of orientation fractures
14 over here at Little Bear. We measured fractures at Dry
15 Canyon just above Birch Springs and we also measured them up
16 at the top of Bear Canyon. And you can see that they all
17 have a consistent predominant direction of slightly off of
18 north.

19 And the one thing that you can see is with that
20 orientation these fractures were measured throughout the
21 formation thickness. I measured fractures in the Star
22 Point, I measured them in the Black Hawk, and I measured
23 them in the North Horn. And that indicates that the units
24 fractured similarly during this event. The North Horn did
25 not fracture separately or have any other features besides

1 what happened all the way through the unit. Now if you go
2 out to these outcrops you'll notice that there are very
3 predominant fracture zones that continue all the way from
4 the Star Point up through the units, up through the Black
5 Hawk unit and up through the North Horn formation.

6 Q. What you're telling us is that cracks on top of
7 the North Horn will find expression vertically all the way
8 down to the Menko shale?

9 A. It's possible they could. Or it can drop water
10 down several hundred feet to another confined layer and move
11 horizontal until it intercepts another fracture.

12 Q. And you testified that the North Horn is a
13 perched aquifer system?

14 A. Yes.

15 Q. But those -- maybe I'm mischaracterizing this,
16 so clarify it. I have really it would only slow the water
17 up. It wouldn't stop it from going down; correct?

18 A. It will stop -- it will stop water from going
19 down, unless it finds an avenue to go down. Either the
20 perched system discontinues or intercepts a fracture, an
21 opening. The reason it's perched is because it's
22 intercepted a clay layer or a shaley zone or a zone of lower
23 permeability. Now if that zone discontinues which is
24 typical in these rocks because near fluvial systems you may
25 see zones that are two or three hundred feet wide and then

1 it ends and you have vertical flow again. That water goes
2 somewhere.

3 MR. CARTER: Can I ask a question?

4 THE WITNESS: Sure.

5 MR. CARTER: Here's the orientation of the fault, and
6 here are the primary orientations of the fracturing, and
7 they're not coincident. Is your theory that the fracturing
8 and the faulting, and I don't -- well, it's been a while,
9 but I don't see that they relate to one another.

10 THE WITNESS: They don't relate to one another. The
11 fracturing is regional. And we also pulled in fracture
12 orientations on a study that was done in Woodward Canyon
13 here just off the fault, and you can see they're the same.
14 What the implication is is that the whole area inside and
15 outside this fault zone is equally fractured.

16 MR. CARTER: So it's not contemporaneous with the
17 fault?

18 THE WITNESS: No, no. It's equal everywhere. We
19 also -- I also looked at a study done by Hucka of the Utah
20 Geological Survey and she measured fracturing orientations
21 both on the surface and on the cleat faces inside of coal
22 and coal seams off of, well, all the way around this area,
23 and it's pretty typical to find this same orientation of
24 fractures. The fracturing is intense and it follows an
25 original pattern which is probably quite separate from a

1 normal faulting that occurred through here.

2 MR. CARTER: Predates or postdates the faulting?

3 THE WITNESS: Predates the faulting. This faulting
4 there's several ideas about what causes this faulting. This
5 is kind of unusual. If you compare this intense normal
6 faulting with the normal faults that have developed as part
7 of the basin range in Nevada, you don't see any rotation on
8 this, meaning the beds inside the fault will rotate a
9 hundred, 180 degrees and you'll find vertical beds, you'll
10 find 45 degree dipping beds.

11 In this area here they all dip the same. The
12 idea is that salt in the lower formations has moved out or
13 flowed and this is actually the void that's just dropped
14 down and filled in. So this is kind of an unusual fault
15 zone in that you've got displacements of anywhere up to
16 some zero to 450 feet and they've dropped down but you
17 haven't had any rotation on the faults. They all dip the
18 same direction, about two to four degrees inside and outside
19 the fault zone.

20 Q. BY MR. APPEL: Following up on Mr. Carter's
21 question, we have, the region is fractured and the same,
22 yes?

23 A. Yes.

24 Q. And outside the fault?

25 A. And inside. It doesn't mean anything.

1 Q. And that's where I'm headed. There's an area
2 called shattered zone. Did you measure any difference
3 between the shattered zone faulting and jointing and the
4 area above the permit for the mine?

5 A. Now we actually -- I didn't collect any in this
6 area, but I've been up there several times and I've looked
7 at the fractures, and they do have the same orientation as
8 down here. There's no difference.

9 This base map comes from a study done by Brown
10 from the USGS to contour the top of the Star Point
11 formation. And he put shattered zone inside this fault zone
12 right here, right on top of Gentry Mountain.

13 You'll also notice it has another shattered
14 zone right over here inside the Joes Valley graben. And
15 having looked at the area up here, looked at the area up
16 here, seen this one underground and seen this area right
17 here, the interpretation of shattered zone, I don't think
18 it's limited to this area right here. It intimates intense
19 fracturing throughout the whole system.

20 The mapping done by a geologist up here at the
21 Star Point or in the mine here identifies a graben system
22 right here with a whole series of normal faults. And if you
23 look at the geology and topography, you can continue that
24 graben structure at least down to the top of Bear Canyon.

25 To me that's the interpretation of what

1 shattered zone is, intensely faulted, intensely fractured,
2 because you've got the same interpretation over in here.
3 There's no reason to interpret that shattered zone. It only
4 implicates the Joes Valley, inside the Joes Valley graben.
5 What he's done, he's got the Joes Valley graben and
6 shattering inside the Pleasant Valley fault zone.

7 Q. Is there any difference in the water recharge
8 pattern between the area identified as shattered zone and
9 the area, the rest of the area within the two faults,
10 including the permit area, the area above the permit of
11 Co-op?

12 A. What do you mean by recharge?

13 Q. Water recharge. How would the water move?

14 A. The water in this whole area -- let's step
15 back. The recharge in this whole area in the Wasatch
16 Plateau typically comes from snow melt. That's 95 percent
17 of where the water comes from. That recharges these rocks.

18 Q. So wherever the snow falls it will recharge
19 from that point?

20 A. That's where the recharge comes from.
21 Typically you get snowfall on top of this area right here,
22 but any elevation where the North Horn sits is usually flat
23 and it's going to receive recharge. There's no particular
24 reason to say based on my experience that the recharge is
25 going to be different here than different here. It may be

1 different amounts because based on the amount of snow that's
2 available when it melts, storms, there's no reason to say
3 that recharge, vertical downward flow is any different here
4 than it is right here in this area, for that matter anywhere
5 here in this fault zone.

6 Q. The shatter zone, the official expression of
7 the shatter zone is the North Horn formation, isn't it?

8 A. Yeah. You can't walk up in here and see it
9 physically any different than you can down here in any of
10 these other spots.

11 Q. So any water that would land on the shatter
12 zone would --

13 MR. OWEN: There's no difference in the recharge in
14 the ledge and peak area than there is in the McCadden
15 Hollow?

16 THE WITNESS: Not as a physical flow. Now there may
17 be differences in amount because of the amount of snow
18 that's available, but not physical movement of water
19 downwards or outward.

20 MR. CARTER: Let's -- that was Wendell Owen, in case
21 you hadn't been introduced.

22 THE WITNESS: The amount may be different. You may
23 get slightly less recharge here, but the physical property
24 of the water moving down, could be found, or moving down
25 vertical fractures into the Star Point is the seam.

1 Q. BY MR. APPEL: Are we in a fracture zone you're
2 talking about?

3 A. Yeah, the fracture zone I believe is.

4 Q. We are in a fracture zone?

5 A. Yeah. You're right between the two major
6 faults.

7 Q. And back to my question before Mr. Owen spoke,
8 there's no difference in the way the North Horn formation is
9 going to respond to water recharge throughout the entire
10 faulted area, is there?

11 A. No. In fact there's no difference inside the
12 fault as Lines observed and as Danielson, Waddell observed
13 at the other locations. It typically behaves as a perched
14 aquifer. Springs dry up.

15 But you know the interesting thing is they
16 noted that the volume of water had on springs cannot be
17 accounted for by the volume of recharge you would expect,
18 recharging 20 to 25 inches over the area in question right
19 here. So there has to be some downward movement to account
20 for that volume of water.

21 Q. Okay. You may want to make a drawing. And I
22 guess the only thing we have is a chalkboard over here. I'd
23 like you to show us a vertical expression. Sorry.

24 (Pause in the proceedings.)

25 Q. BY MR. APPEL: Okay. What are we showing here?

1 A. This is a cross-section that goes from
2 essentially Upper Tie Fork through the top of Gentry
3 Mountain, through McCadden Hollow and down into Huntington
4 Canyon.

5 Q. We're going to stop and see McCadden Hollow
6 today, aren't we?

7 A. Yeah.

8 Q. Where would the springs be located?

9 A. Big Bear would be located about right here.
10 Right in the point of the Star Point sandstone essentially.

11 Q. Okay. Now describe how water recharges through
12 this stratigraphy.

13 A. Well, this unit right here, I don't know how
14 well it shows up, being the North Horn formation, if you've
15 got water entering the system there, now let's make that a
16 little bit here. This is just -- it's not to scale or
17 anything. This is just to show what we think is going on
18 there.

19 Q. Is the dip intentional?

20 A. It may be slightly exaggerated.

21 Q. In any event --

22 A. It's not dipping that much, but it is slightly
23 that way.

24 Q. Water is going to move generally in that
25 direction?

1 A. Water will follow the dip of the rocks. That's
2 typical. If recharge enters the system anywhere along here,
3 it percolates down through the system until it intercepts an
4 impermeable layer. Once it intercepts this permeable layer
5 and there's an unsaturated zone between it, that's defined
6 as perched.

7 Now the water will still be moving at various
8 directions. Now it may move that direction and it may move
9 this direction, but it's going to roll off that perched
10 area. But the length of this can be miles or it can be a
11 few feet or several hundred feet, depending on what the
12 fluvial pattern was that deposited that shale or that clay
13 that's causing that perch zone.

14 But once that ends that water will move back
15 into the sandstones and move again. Now it's also possible
16 that we've got -- all this intense fracturing that we show
17 that you've got a fracture zone down in through here that
18 cuts through that. Maybe it's slightly displaced. And if
19 water encounters that, there's no reason to think that water
20 won't flow down there and that's just a leaky confining
21 layer.

22 Q. So all the clay fractures, sorry, clay layers
23 within this will fracture as well?

24 A. Yes, they will fracture as well because
25 typically they're on the order of several feet thick and

1 they will fracture.

2 Q. Is that true with respect to the Star Point as
3 well?

4 A. Yes, the Star Point will fracture as well.

5 Q. Okay. So water will move between the three
6 tongues of the Star Point?

7 A. Yeah. There's no reason to think it won't move
8 between the three tongues. Especially as you move further
9 north in the Gentry area and the lower sandstones become
10 more, well, become less shaley and the interbedded sequences
11 become thinner. The shaley tongues of the Menkos that
12 interbed in the Star Point sandstone thin as you move north
13 and become thicker as you move south. And there's no reason
14 to think that you won't get fracturing down there through
15 there and get vertical water movement between those. That's
16 not to say that if certain portions, if you were to measure
17 water in here, especially inside the Star Point sandstone,
18 that may be confined when you measure it.

19 Q. But upgradient, it may not be --

20 A. Upgradient, it may not be or upgradient, it may
21 be fractured and moving down from a different horizontal,
22 yeah. That's typical of an intensely fractured system to
23 have this kind of vertical movement of water. It's typical
24 of stratigraphy where you have open fractures. It's typical
25 granitic terrain which are heavily fractured. You get

1 downward movement of water and it's typical of these kind of
2 sandstones as well that you've got water moving in and out
3 of perch zones, water moving confined and unconfined and
4 finally discharge where it intercepts the Menko shale and
5 the canyon.

6 Q. Okay. Show us where the coal seams are.

7 A. Well, they'd be in this area right here.

8 Q. In this case let's stick with the blind
9 canyon.

10 A. The blind canyon.

11 Q. Since that's at issue.

12 A. Something like that.

13 MR. CARTER: Isn't the tank seam over the blind
14 canyon?

15 THE WITNESS: Yeah. The tank seam would be here.
16 Here's the tank.

17 Q. BY MR. APPEL: You may show us the Hiawatha.

18 A. The Hiawatha would be right on top or separated
19 by a few feet of material on top of the Star Point.

20 Q. Okay.

21 A. Roughly.

22 Q. And the springs are at the toe of your diagram?

23 A. Yeah. They're down here.

24 Q. Okay. Are you familiar with the term
25 potentiometric surface?

1 A. Yeah.

2 Q. Can you show us roughly where this was before
3 mining began in your best estimation?

4 A. Our best estimation using the springs at Bear
5 Canyon and several of the wells by Co-op in the Star Point
6 sandstone plus wells they've done in Star Point sandstone in
7 about this region and Upper Tie Fork Spring, the
8 potentiometric surface, something like this (indicating).
9 In fact I got the potentiometric surface over there on that
10 next map that I generated, that one right there, showing
11 groundwater flow based on the wells that Co-op has at the
12 mine, above the mine and from the ones up on Gentry Ridge.
13 That's what that's based on.

14 Q. Okay.

15 A. So we've got 10 data points, I guess.

16 Q. Okay. So explain the water recharge pattern
17 from precipitation. You testified that 95 percent of the
18 water comes from precipitation?

19 A. Yeah. The water enters the system through snow
20 melt right up here. It will move down and either
21 intercept --

22 Q. When you say right up here, you mean --

23 A. Gentry Mountain.

24 Q. -- the entire area?

25 A. The entire area.

1 Q. You're not pointing to just a specific point?

2 A. Either here or here. It doesn't make any
3 difference.

4 Water enters the system, goes through the soils
5 zones, enters the system, moves through either the natural
6 porosity of the rocks or through a fracture. It may not
7 intercept a perch zone or it may. If it does it becomes
8 perched and either moves some direction based on what the
9 hydrologic radiants are on that perched area, and eventually
10 it may discharge at this point right here. It may come out
11 as a spring up in the North Horn or it may continue down as
12 vertical flow down into the lower units. It may intercept a
13 confining layer here in the upper Black Hawk portion or in
14 the Price River and behave the same way. But eventually
15 along here water will enter into the Star Point sandstone
16 and Lower Black Hawk. And the reason it can't go any
17 further is because you've got the Menko shale which is the
18 regional aquitard in the area. It may be saturated but
19 permeabilities are so low that water for all intents and
20 purposes does not move through the Menko shale. So it has
21 to come through the Star Point sandstone.

22 Q. What's the definition of an aquitard?

23 A. An aquitard is a layer that may have -- it may
24 have some flow to it, some vertical flow, horizontal flow,
25 but the flow rates and the permeabilities are 10 to the

1 minus 17, 18.

2 MR. CARTER: Isn't Menkos also fractured?

3 THE WITNESS: Menkos is also fractured and faulted.

4 MR. CARTER: And faulted?

5 THE WITNESS: Especially in Huntington Canyon where it
6 gets buried in alluvium, but they do crease (phonetic). So
7 the Menko would be fractured and offset in Huntington
8 Canyon. So it will fracture and break.

9 Q. BY MR. APPEL: So drops of water that fall on
10 Gentry Mountain, whether it be rain, snow, or anything in
11 between, would move down the same way throughout this entire
12 area?

13 A. Yeah. No difference. No difference whether
14 it's inside the Pleasant Valley Fault Zone or on either side
15 of it. It may be more fractured inside the zone, but that's
16 still a typical groundwater flow pattern. It either
17 intercepts a perch zone and it may discharge or it's going
18 to move down to the fracture zones.

19 Q. Okay. Is it going to assist you to go back to
20 Plate 2 at the risk of offending everyone else in the room?
21 Would you like to talk a little more about the
22 potentiometric surface?

23 A. Well, we can, yeah.

24 Q. I'd like to make sure we get some more details
25 on that plate. We could move it over here.

1 (Pause in the proceedings.)

2 Q. BY MR. APPEL: Now this is Plate 2. All of
3 your testimony with the exception of the drawing referred to
4 Plate 1?

5 A. Yeah. Now just for the record, this drawing is
6 not to scale. This is just one I made on -- the drawing on
7 the board is just for general purposes.

8 Q. Okay.

9 A. Now --

10 Q. This is a more accurate depiction of it?

11 A. This is more accurate. We took the water
12 levels from both springs.

13 Q. I wanted to add something else. This is a more
14 accurate depiction of the groundwater elevation?

15 A. Correct. The groundwater on Star Point over
16 Black Hawk.

17 Q. You're talking about Plate 2?

18 A. Plate 2. Actually I've got another Plate 2
19 over there, so this is the big Plate 2.

20 Q. Big plate 2, Exhibit 4.

21 A. To reiterate, the springs discharge from the
22 Panther member of the Star Point sandstone as well as one on
23 the end of Gentry Ridge from Star Point mine permit. So we
24 generated all the way down through the Pleasant Valley Fault
25 Zone. Two major faults right here. That's what we did.

1 And you can see it moves from high potential to
2 low potential from what we would expect. This fits in the
3 pattern of it moving in this direction and flow coming in
4 this direction. Right in this area right here is the layout
5 of the blind canyon seam showing their mining.

6 As of current I believe this year has been
7 mined in for -- I'm not real sure when they mined their
8 last. But I think this was current, your current layout,
9 the water table at 7500 feet and at 7550 feet intercepts
10 according to this potentiometric surface right here. They
11 have intercepted the water table for the Star Point
12 sandstone in that area right there. So they've now mined
13 into it based on elevations here and elevations inside the
14 mine in the blind canyon.

15 So that leads to the conclusion that any mining
16 in the Hiawatha seam north will also intercept the water
17 table at a higher point because it's about a hundred feet
18 lower, so you're going to be moving down intercepts
19 quicker. The tank seam probably never intercepts the water
20 table. It's just too low.

21 Q. The water table is too low along the canyon?

22 A. The surface is.

23 Q. How many feet of potentiometric surface has the
24 Co-op mined in the blind canyon?

25 A. I would guess they've mined several hundred

1 feet. I'm not sure of the exact intercept. Somewhere
2 between 7500 and 7550. Probably where DH-2 is
3 approximately. So they're several hundred feet into the
4 water, potentiometric surface right there.

5 Q. Right now?

6 A. Right now. As it sits now, yes. So anything
7 further north will continue to be in the water table.

8 Q. You've reviewed the documents concerning water
9 flow from the Co-op, haven't you?

10 A. Mm-hmm. Yes, I have.

11 Q. Is the water flow that they've encountered
12 consistent with your theory?

13 A. I think so. Most of their water is now coming
14 out of the northern part of the mine in this area.

15 Q. Okay. Why is it consistent with your theory?
16 Explain that to me.

17 A. When I worked at the mine at Star Point Mine,
18 we calculated a similar occurrence. You were here north.
19 We calculated where this potentiometric surface would
20 intercept a third seam that we were mining at the time. And
21 I think roughly within a couple hundred feet of where we
22 calculated we intercepted water and flows would be
23 intercepted in a fracture. They'd flow at several hundred
24 gallons a minute and finally lead off to a dripper or
25 quitter or small flow.

1 But from that point on the mine was wet. You
2 had ponded water all the time, you intercepted a lot of
3 water in fractures, and it was wet. Even though fractures
4 may have a lot of water and discontinue at some point,
5 others would continue all the time. It was wet.

6 And the same occurrence is happening here.
7 Intercepting fractures where water's coming in, but as you
8 move into the water table that's what you would expect.

9 Q. Okay. When do you think they first -- we need
10 a year date at this point. When do you think they first
11 encountered the potentiometric surface? Let me back up.
12 You're aware of the event in 1990, 1991 as we talked about
13 it this morning?

14 A. At Big Bear Spring.

15 Q. Found a large amount of water that went into
16 the old workings?

17 A. Yes. They intercepted that water in this area
18 here when they were mining.

19 Q. So they ended the potentiometric surface?

20 A. They were getting close to the potentiometric
21 surface, yes.

22 Q. Now you've referred to some of Earthfax
23 testimony, haven't you?

24 A. Yes, I have.

25 Q. And their conclusion is that what has been

1 encountered since 1990 and 1 are a series of perched
2 aquifers in the Black Hawk formation; is that correct?

3 A. Yes, yes.

4 Q. Does that make any sense to you?

5 A. Well, it's possible it's perched aquifers in
6 the Black Hawk system, but that does not mean that it's not
7 moving down to Star Point once again. So you're
8 interchanging the recharge to the Star Point sandstone only
9 it may be following a sandstone channel in the Black Hawk
10 formation.

11 Q. How do you differentiate the perched aquifer
12 from the potentiometric surface, or do you?

13 A. Yes, you do. This is the potentiometric
14 surface in the Star Point sandstone here. A perched system
15 has an unsaturated zone above the potentiometric surface so
16 it's elevated above it.

17 MR. CARTER: So you have dripping water instead of
18 standing water.

19 THE WITNESS: Exactly. Exactly. Exactly.

20 Q. BY MR. APPEL: But perched water or
21 potentiometric surface, was that part of the natural
22 recharge pattern for these two springs?

23 A. Yes.

24 Q. Why do you say that?

25 A. Because if you've got water moving through a

1 perched system intercepting fractures and moving downward,
2 that's the recharge to the larger regional aquifer. There's
3 not a particular point along here where you can say, yes, a
4 stream is going in to the Star Point sandstone or something
5 else is occurring. This whole area is recharging the Star
6 Point sandstone. The water goes in at the top of the system
7 up in the North Horn. It moves down, moves vertically,
8 moves horizontally and finally ends up recharging the Star
9 Point sandstone and the lower Black Hawk.

10 Q. Okay. So the mining has affected historic
11 recharge to the springs?

12 A. Yes.

13 Q. And that's your conclusion?

14 A. Yes.

15 Q. Based upon the geologic --

16 A. Based on the geology. Now the other idea
17 you've got to put in here is mining induces subsidence in
18 the overburdened rocks, based on a USGS report that Dunrod
19 did in this area. He also says that to a lesser degree,
20 subsidence or altering of the rocks occurs below the mine.

21 That's why you get floor seeps. You get
22 compression zones that develop over a mined area and you get
23 a compression zone that develops underneath it where you get
24 relief of stress.

25 And it is my opinion that as you relieve the

1 stress you're altering the fracture zone. You alter the
2 porosity and permeability of the rocks at least above and
3 potentially the rocks below.

4 Q. And the impact on that -- on water recharge is
5 what?

6 A. And you may -- you may be diverting water from
7 a natural existing flow path or you may be captured into the
8 mine; you may be diverting it away from the natural flow
9 path. And that's just because of subsidence. And that's
10 not necessarily caving, the subsidence. It's just moving of
11 a stress zone upward and altering the opening of fractures,
12 closing some, opening some, changing the permeability and
13 the porosity of the unit on the whole.

14 Q. And you've been in the mine?

15 A. Yes.

16 Q. And taken all the samples you thought were
17 necessary?

18 A. Yes.

19 Q. And looked at almost all the areas you wanted
20 to?

21 A. Yes.

22 Q. What is your conclusion concerning the
23 interception of water that was naturally tributary to Birch
24 and Big Bear Spring?

25 A. I think if you look at their mine pattern, and

1 it was the same mine pattern we had up here, they've got a
2 lot of sumps developed all here in the blind canyon seams.
3 That indicates there was a fair amount of water coming into
4 the mine or you wouldn't need sumps to pump it out, which
5 means you were intercepting water and you had to store it
6 for usage or dust control or whatever else and moving it
7 out.

8 So they were intercepting water as they were
9 mining north because they've got the sumps in there to
10 develop that. And they've got water coming in there
11 currently as it is.

12 Q. So but for the water that would have flowed in
13 your opinion to feed the springs that --

14 A. Would have at some time fed the springs or
15 flowed down through that system there. The spring being
16 the --

17 Q. Where does it go there?

18 A. It's probably either diverted out of the mine.

19 Q. Where does that go?

20 A. It goes out currently right now into Bear
21 Canyon right through into the portals and discharged into
22 Bear Creek, or it's going down the fracture zones and may be
23 discharging into Huntington Canyon right now, but it's the
24 recharge that's probably been diverted away from the
25 spring. And I think we can show that on the flow pass for

1 these flow documents.

2 MR. APPEL: Okay. At this point I should probably
3 make a time note. Mr. Hansen as I indicated to you
4 previously needs to be back leaving for Salt Lake City by
5 3:00 or 3:30. We should probably -- this is a reasonable
6 place in his testimony to stop because we've done the
7 geologic aspect, and the rest is some other tests that we've
8 accomplished, and it would be appropriate for us to go up on
9 the field trip, and this is a reasonable time to do that.

10 We will need at least four hours to do that by
11 my calculations. If we were to stop at Subway and get a sub
12 that we could take with us, we could meet Mr. Hansen's
13 schedule if we leave shortly.

14 MR. CARTER: I think we ought to follow up, allow you
15 to examine.

16 MR. HANSEN: They are certainly entitled to put their
17 entire testimony and I don't want to do anything to preclude
18 that. It may be possible that I can cut out early from the
19 site inspection and that you can continue without me. It
20 all depends on how it goes out there. My main involvement
21 there would be to take notes if we're taking -- are we going
22 to be able to transcribe out there or not?

23 MR. CARTER: We won't.

24 MR. HANSEN: If I have to leave early, I would rely on
25 my fellows here to take good enough notes to get me up to

1 speed on what was said.

2 MR. CARTER: I see the purpose of the field trip to be
3 illustrative of the testimony that is being presented; that
4 is, we'll go look at the spring, we'll go look at the Star
5 Point, we'll go wave our arms in the field the way
6 geologists like to. But it would be simply illustrative of
7 the issues or the factual assertions that are being made in
8 the context of the transcript.

9 MR. HANSEN: I do not wish to have my schedule
10 interfere with what's going on here.

11 MR. APPEL: Oh, it's the length of the trip that's
12 really causing the problem here. It's easy to meet your
13 schedule by doing -- this is a logical breaking point and
14 what I've tried to do is get us prepared in the geology.

15 Mr. Smith may have a couple follow-up geology
16 questions which we should take and make sure that portion is
17 done.

18 MR. CARTER: All right. What other testimony?

19 MR. SMITH: I have some chemical, the ice topic,
20 hydrologic conductivity and flow rates. There's quite a
21 bit.

22 MR. CARTER: And all that testimony would be
23 introduced by whom?

24 MR. APPEL: This witness. And then we have at least
25 another witness to go; hence my recommendation that we take

1 a break now and do the field trip.

2 MR. CARTER: I guess my only concern here is if --
3 I'm just thinking out loud, but it should be on the record.
4 It would be logical to break after the opponents have made
5 their case on the record. It would allow Co-op time to
6 prepare a response and some short period of time we'd
7 reschedule the hearing.

8 I think my preference would be to get as much
9 of your case into the record today as we're able to and
10 begin, and then go into the field and see as much as
11 Mr. Hansen's able to stay with us to see to get all of your
12 case into the record if we're able to today.

13 MR. APPEL: We won't be able to.

14 MR. CARTER: You can tell by the way this is going?

15 MR. APPEL: I know. I can tell by the way it's going
16 now.

17 MR. CARTER: Do you have a preference here? I have no
18 difficulty breaking here and moving to the field and
19 reconvening and taking the ice topic.

20 MR. HANSEN: I have no preference. As I said, I'd be
21 happy to let the water users put on their full case. I
22 don't anticipate getting to the point where I'll be able to
23 cross-examine their expert today based on what has been said
24 about the length of their case.

25 MR. CARTER: All right. Then let's do that. Let's

1 break at this point. Perhaps we should identify a
2 continuation date right while we're all here. Let's get our
3 calendars. And can we conclude the transcribed record at
4 this point. I think the rest of this is scheduling and
5 logistics.

6 MR. HANSEN: That's fine with me.

7 MR. APPEL: I believe so.

8 MR. CARTER: All right. Then that will be the
9 conclusion of the hearing today, and we'll return to the
10 record to tell you when the continuation will be. Thank
11 you.

12 (The hearing was adjourned at 11:14 a.m.)
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C E R T I F I C A T E

STATE OF UTAH)
COUNTY OF SALT LAKE) : ss.

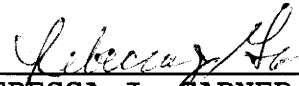
THIS IS TO CERTIFY that the foregoing hearing was taken before me, REBECCA J. GARNER, a Certified Shorthand Reporter and Notary Public in and for the State of Utah, residing at Orem, Utah.

That the witnesses were by me, before examination duly sworn to testify the truth, the whole truth and nothing but the truth in said cause.

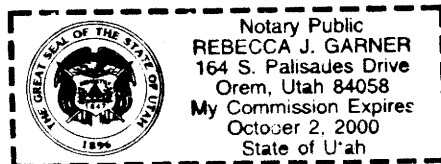
That the testimony in the aforementioned hearing, including the testimony of said witnesses, was reported by me in Stenotype and thereafter caused by me to be transcribed into typewriting, and that a full, true and correct transcription of said testimony so taken and transcribed is set forth in the foregoing pages numbered from 1 to 110, inclusive.

I further certify that I am not of kin or otherwise associated with any of the parties to said cause of action, and that I am not interested in the event thereof.

WITNESS MY HAND and official seal of Orem, Utah, this 28th day of October, 1996.


REBECCA J. GARNER, RPR
Utah License No. 328
California CSR No. 9823

My Commission Expires:
October 2, 2000



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: ss.
COUNTY OF SALT LAKE)

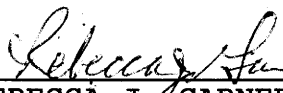
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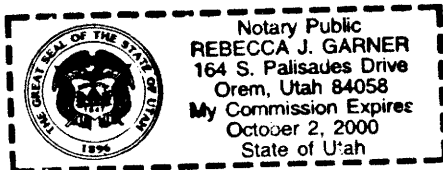
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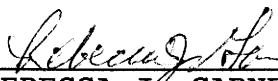
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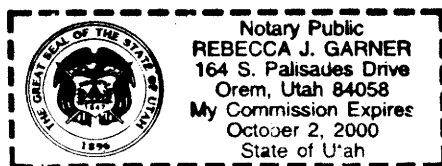
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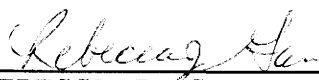
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